

THE *A. Hall*
ELEMENTS
OF
SURGERY.

In which are contained

All the essential and necessary Principles of the ART; with an Account of the Nature and Treatment of Chirurgical Disorders, and a Description of the Operations, Bandages, Instruments, and Dressings, according to the modern and most approved Practice.

Adapted to the Use of the CAMP and NAVY,
as well as of the Domestic SURGEON.

Illustrated with Copper-Plates.

By SAMUEL MIHLES, M. D.

The SECOND EDITION, altered and considerably augmented with several of the latest Improvements in Practice and Operations.

By ALEXANDER REID,
Assistant Surgeon to Chelsea Hospital.

LONDON:

Printed for ROBERT HORSFIELD, at the Crown
in Ludgate-Street. M DCC LXIV.

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Admitted to the U.S. of the Command Navy
as a member of the Dental Service

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The Dental Service, U.S. of the Command Navy

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TO
JOHN RANBY, Esq;

Principal SERJEANT-SURGEON
to His MAJESTY,

AND
SURGEON to *Chelsea Hospital*,

This SECOND EDITION of a
Compendium of SURGERY

Altered and Augmented,

Is dedicated by

His obedient,

humble Servant,

ALEX. REID.

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P R E F A C E.

IT will not be improper to give the reader some account of the Alterations and Additions made to this new edition of the Elements of Surgery; as to the first, the *Alterations* chiefly consist, in reducing the arrangement of the diseases into a more methodical manner, expunging some of the theoretic parts, as vague and uncertain, and changing the manner of treatment of several of the diseases from the exploded practice of ancient Authors, to the most approved methods followed by the most experienced and eminent modern *English* Surgeons.

The *additions* are of some Operations either omitted in the first Edition, or invented since; together with some diseases of consequence, and the method of treating them. Of the Operations, the extraction of the Cataract or opaque ChrySTALLINE, the radical
Cure

P R E F A C E.

Cure of the Hydrocele, and *Pouteau's* method of puncturing the bladder through the Rectum, are new, and invented since the first Edition. Slitting of the Iris, extracting of the Polypus by Ligature, dividing the Mastoideus Muscle for the Cure of the Wry-Neck, and the manner of Inoculating for the Small-Pox, were omitted; as were the Description and Treatment of the following Diseases; the Carbuncle; most of the cutaneous Diseases; the Club-foot; the Abscess of the Liver, and Tumor of the Gall-bladder; the Varix; Diseases of the Eye-lids; and Strictures in the Urethra. Besides which there is added, a compendious chirurgical Pharmacopeia, comprehending the most approved and adequate Remedies used by the most experienced Surgeons, and in the several Hospitals in *London*; amongst which are two Remedies for Cancers, which of late have
made

P R E F A C E.

made a great noise in the World, the escharotic or caustic powder, said to be *Plunket's*, and the extract of Hemlock, &c. so strongly recommended by Dr. *Storck* of *Vienna*.

In compiling a Work of this kind it is impossible to avoid making Extracts, or copying from the most approved Authors; those I have made free with, are the books in highest repute in *England*; and as the *English* Method of Practice is equal, if not superior to any in *Europe*, I have confined myself chiefly to that, and wherever I have borrowed from any Gentlemens Works, have candidly acknowledged it, and hope they will not look upon me in the light of a Plagiary, because I have used their own Words; since where their descriptions have been alter'd or contracted, I am very sensible I have done them more Injustice, than if they had been copied verbatim. Such a Compendium

P R E F A C E.

pendium as this is of Surgery, however, I hope, will have its uses, and be no inconsiderable help to the young Student, as of all the methods that of Question and Answer makes the most lasting impression on the memory, and conveys instruction in the most easy manner. To the Authors I have borrowed from, *Mr Sharp, Pott, Ranby, Gataker, Gooch, Le Dran, Pouteau* and *Heister*, the Reader is referred for more ample information; and if I have committed no capital errors, and made any useful improvements in this Edition, my Ambition will be fully satisfied, and my Intention sufficiently answered.

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THE



ELEMENTS OF SURGERY.

Q. 1. **H**OW do you define the Art or Profession of Surgery?

A. Surgery is that most ancient and apparently useful Branch of Physic, which treats Disorders by *manual Operation*, (as the Word originally imports) assisted with *Instruments and topical Remedies*. But yet are we not to exclude the Use of internal Remedies, with a proper Regimen, &c. though these are more peculiarly the Province of the Physician and Apothecary, as Physic now stands divided into Three distinct Professions.

Q. 2. What are the Parts of Surgery?

A. It has been usually divided, according to the Nature of the Operations, into the
B follow-

following Parts. 1. *Syntbesis*, including the Conjunction of divided Parts, as in curing Wounds, Fractures, &c. 2. *Diarefis*, or the Division of Parts joined, as when the Fingers grow together, the opening of Abscesses, &c. 3. *Exarefis*, or the Extirpation of morbid Parts, as of foul Teeth, Cancers, Scirrhi, &c. 4. *Aphæresis*, or the Amputation of entire Parts, as of Fingers and Toes, Legs and Arms, Wens, &c. 5. *Diorthosis*, or the Rect-Apposition of Parts dislocated or deformed, as in Luxations, the wry Neck, &c. 6. *Prosthesis*, or the supplying lost Members and other Deficiencies by Instruments artificially contrived; as artificial Teeth, Eyes, Hands, &c. Which last is now the Business rather of the Instrument-Maker than the Surgeon. —Others divide Surgery more generally into, 1. the *Pentateuch*; (treating of Wounds, Fractures, Luxations, Tumors and Ulcers); 2. the *Operations*; and, 3. the *Bandages*.

Q. 3. What are the principal Instruments used in Surgery?

A. These are either for the Pocket or to be kept in the Chest or Study. The Pocket Instruments now generally made use of by the Surgeons of *London*; are, a Case of Lancets for bleeding. Strait and crooked Scissars Probe pointed; an Imposthume Lancet, a strait Bistoury, a Pair of Forceps, a
Spatula,

Elements of Surgery.

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Spatula, different kinds of Probes, straight and crooked Needles, a silver Quill for holding Lunar Caustic and Precipitate; and a Director, all these in a Case or Pouch. A Salvatory and Plaster Box. The Instruments for the Chest or Study will be mentioned and described with the respective Operations to which they belong.

Q. 4. What are the common Materials for Dressings in chirurgical Disorders, and after the Performance of Operations?

A. They are Lint made up into various Forms, Compresses or Bolsters, Plasters and Bandage. Even sometimes Compress and Bandage alone make the whole Apparatus, as in many simple Fractures, Luxations, &c.

Q. 5. What are the Uses of Lint?

A. Dry Lint is used, 1. as the most innocent Styptic to restrain the Hæmorrhage in recent Wounds; for which purpose it is likewise in larger Hæmorrhages dipt in some styptic Liquor, &c. 2. Another Use of Lint is to heal, or incarn or cicatrize clean Wounds, which it does by absorbing the Matter in them, and excluding the injurious Air. 3. It is used to dilate Wounds, and keep open their external Orifice, till the bottom is cleansed and healed; as also to compress

press and keep down fungous or proud Flesh, which retards the Cicatrization.

Q. 6. In what Forms is Lint applied for these Purposes?

A. Sometimes it is applied in a flat and oval Shape, and then it is denominated a Pledget. (*Tab. II. fig. 1, 2.*) Sometimes it is convoluted into a cylindric or globular Form, and then it is termed a Dossil, (*ib. fig. 3, 4, 5.*) which is either applied loose, or secured round the middle with a thread (*ib. fig. 6, 7.*): but when Lint is tied very close together in a conical shape, it is then called a Tent (*ib. fig. 8, 9.*); which last is of late justly brought into disuse, as it irritates and renders the Lips of a Wound callous by its Hardness and Compressure, so as greatly to retard the Cure.

Q. 7. But are there no Cases in which the use of Tents may be allowed?

A. If they may be used any where, they may in Wounds of the Thorax or Abdomen, to keep open the Perforation, to give a Discharge to the confined Blood or Matter; and in this case the Tent should be only a bit of fine Rag or Lint rolled up into a Cone, with a downy Apex, and secured from slipping in by a thread fastened to its Basis. But if the Tent is designed to dilate
some

some narrow Opening, Abscess or Fistula, &c. where the Patient will not permit the Knife; it is then usually made of Sponge dipped in melted Wax, and kept compressed between two Plates till cold, when it is cut as to Size and Shape agreeable to the design. Thus the Warmth of the Parts softening the Wax, the Sponge by degrees swells and dilates the Opening.

Q. 8. What are the Materials and Uses of Compresses?

A. These are usually made of Linen folded together, and applied either dry or dipped in some Liquor, to make the Bandage and Splints sit easy and press effectually upon the Parts, also to retain the Dressings, and often the Parts themselves in their due Situation. When the Compress is to make a considerable Resistance, as in many Fractures and Luxations, it is often made of a piece of Emplaster folded together: They are formed as to size and shape agreeable to the design and part which they are to invest. See the various Figures of them represented in *Tab. II. fig. a, b, c, d, e, f, &c.*

Q. 9. What are the Uses of Plasters in Dressings?

A. To secure the Dressings or other Applications, to defend Wounds from the Air

and other Injuries, to secure and retain the Fragments of a Bone; as also to ease, dissipate or maturate in Tumors and Luxations, &c. Add to this their Use as a dry Suture, for retaining the Lips of a Wound together. They vary as to Figure like the Compresses before described, *Tab. II. fig. a, b, c, &c.*

Q. 10. What do you mean by Bandage?

A. That which usually makes the last important Article in every Dressing; and which consists of clean, old, but strong Linen, free from knots, hems or roughness, and cut to a proper length, breadth and shape, suitable to the disorder and part to be invested.

Q. 11. How many kinds of Bandages do you make?

A. Bandages are either *common*, or *proper*; and each of these are either *simple*, consisting of one entire piece; (*Tab. II. E, I, P.*) or *compound*, made up of several pieces sewed together, (*ib. C, D, R.*) The simple Bandage is again either equal and *annular*, going round the part like a ring, as in Issues, &c. (*ib. D, F.*) or unequal and *spiral*, where the turns of the Roller shift, by gradually ascending or descending upon the part, (*ib. H, N.*) This last or spiral Bandage is again subdivided into three kinds: (1.) The *devoire* or *spreading*, where the turns deviate in

Elements of Surgery.

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in any degree, more or less, provided they remain contiguous, with their edges wrapping over each other, (*ib.* F. H.) (2.) *Ram-pant* or *creeping*, where the turns of the Roller recede from each other, so as to leave large or small spaces betwixt each round, (*Tab.* XIV. *fig.* F. G.) (3.) The *Reinversed*, which is when either of the former have the Bandage reinversed or twisted at each or every other turn, in order to make it fit tight upon the declivity of some Limb, as upon the Femur, Tibia, and Cubitus. These Bandages of the Roller-kind are said to be single or double-headed, as they are rolled up either at one or both ends, (*Tab.* II. H. O.)

Q. 12. What are the most simple chirurgical Disorders?

A. Tumors, Ulcers, Wounds, Fractures and Luxations.

Q. 13. What do you understand by a Tumor?

A. The Enlargement of any Part beyond its natural Dimensions; which is distinguished in a soft Part into inflammatory, drop-sical and emphysematous, according as the Vessels are distended either with red Blood, watery Lymph, or elastic Air; and these again are distinguished into cystic, where the

B 4

Humours

Humours are collected into a sort of Bag ; or scirrhus, where the Humours are dried and compacted into a hard Body. According to different Circumstances and Parts in which they are seated, Tumors are denominated either Phlegmon, Erisipelas, Oedema, Scirrhus, Cancer, white Swelling, Exostosis, Spina Ventosa, &c. of which we shall speak in order.

Q. 14. What is a *Phlegmon*?

A. A Phlegmon is an inflammatory Tumor from an Obstruction and Distension of the sanguiferous or first Order of Vessels, attended with Heat, pricking Pain, Tension or Resistance, and Pulsation or throbbing. This Tumor terminates variously, according to particular Circumstances ; as (1.) by *Dispersion*, when the obstructed Juices are attenuated and carried off into the circulating Mass without further Injury ; (2.) by *Suppuration*, when the obstructed Blood breaks through and dissolves the Vessels into Matter or Pus, so as to form an Abscess ; (3.) by a *Gangrene* or Sphacelus, when the Humours corrupt, and Life totally ceases in the Part ; (4.) by a *Scirrhus*, when the more fluid Parts of the Humours are drained off or evaporated, the Remainder inspissated, hardened, and concreted together with the small Vessels into a solid Body ; and from a Scirrhus

thus in a glandular Part follows a Cancer, which is an intermixture of dead and living Vessels together.

Q. 15. How do you form a reasonable Conjecture in which of these ways a Phlegmon will terminate?

A. From considering the Patient's Habit, way of Life, and particular Texture of the Part, with the Degree of Violence in the Symptoms themselves. Such Phlegmons as are slight, consequent from taking Cold, without any previous Indisposition, are most likely to disperse, if duly treated in proper time; those, following a Fever in gross Habits, generally suppurate; whereas Phlegmons in old and dropical People, have a strong Tendency to Gangrene and Mortification in a soft Part, and to a Scirrhus or Cancer in a glandular Part, which last as *Celsus* observes may take place in the Bones from a preceding Inflammation. Again, the more distant the Phlegmon is seated from the Heart, the more prone to a Gangrene; on the contrary, the nearer the Heart the more copious the Juices, and the more numerous the Vessels are in the inflamed Part, the more liable is it to Suppuration or Abscess.

Q. 16. By which of these ways (Q. 14.) are you to assist Nature, to terminate a Phlegmon?

A. The two first of these are always the most eligible, more especially the former; that is, to relax the Vessels and attenuate the obstructing Humours, as to restore the Circulation to its due Freedom and Moderation through the diseased Part, without offering any further Injury to the Vessels; and this more especially when the Inflammation is seated in a Part of the greatest Consequence, as the Brain, Lungs, or other Viscera, from whence the Matter formed in a Suppuration, could be difficultly if at all discharged; for in these Cases we have a License to use with the greatest Freedom the proper means for Dispersion, namely, Bleeding, cooling Purges, Refrigerants and Diluents, with Revulsives of all kinds. I say, we are to make use of these means more liberally to procure a Dispersion, as a Suppuration or Abscess would be more dangerous and difficult to remedy. Hence it follows as a general Rule, that a Dispersion must be attempted in all Inflammations, where that is practicable; but that if the Inflammation is obstinate and superficial, the Part of little Consequence, the Patient weak or with Child, &c. in that Case the Suppuration is to be promoted.

Q. 17. How do you attempt to disperse an Inflammation?

A. 1. By discovering and removing all external Causes or foreign Bodies, which compress, irritate, or distract the Vessels. 2. By Bleeding plentifully, according to particular Circumstances. 3. By giving Purges and Clysters, which operate briskly without heating the Body, and repeating them at Discretion. 4. By Abstinence from all animal and gross or solid Food, except Veal or Chicken-broths, made extremely thin; by a plentiful Use of Acids and acescent Liquors with Nitre, &c. observing also to confine the Patient to a temperate Air in his Chamber, encouraging Sleep and a calm Temper of Mind. 5. By the Use of antiseptic Cataplasms and Fomentations with very gentle Frictions, and in some Cases Blisters, Cupping or Scarification, &c.

Q. 18. When and how do you promote Suppuration?

A. If the preceding Means have been used without Effect, if the Inflammation is obstinate or too far gone, and seated in a Part accessible to the Hand; in that Case the impervious Blood and stagnating Humours breaking through and dissolving the smallest Extremities of the obstructed Vessels, and ferment-

fermenting together, both Solids and Fluids are formed into a cream-coloured, thick, mild, and inodorous Matter lodged in the Center and spreading to the Circumference of the inflamed Part, which is then called an Abscess; which I foresee by the proper Signs (Q. 19.), and promote by the proper Remedies (Q. 20.)

Q. 19. By what Signs do you know Matter will be formed in an inflamed Part?

A. 1. From the Violence of the Inflammation, and Intensity of its Symptoms, (to wit, Fever, Pain and Pulsation) suddenly remitting, and being followed with an Enlargement of the Tumor; which more especially inclines to Suppuration, when seated in the adipose Membrane. 2. From the Phlegmon succeeding after an Exanthematous or inflammatory Fever in a young or middle-aged Person of a plethoric Habit, and addicted to high living. 3. From a small Rigor, or Chillness and Shivering, followed with an Easiness of the Part, pointing outward, and feeling soft to the Touch, &c. which last are the most certain and immediate Signs of Suppuration.

Q. 20. What Remedies are useful to forward the Suppuration?

A.

A. These are either external or internal; the first include all unctuous and emollient Applications in the Form of Cataplasms of which that of the *Mica Panis in Lacte coct. cum q. s. Auxung. Porcin. vel Ol. Oliv.* is to be applied warm, and either renewed or kept constantly warm upon the Part. Internally, the Intensity of the Fever, or violent Motion of the Blood, is to be abated by bleeding and cooling Medicines till the Pulse becomes regular, but in weak Habits where the Pulse is low, strong Broths, Ale, and cardiac Medicines are proper, in order to prevent a Gangrene, which may as well be the Consequence of a too languid, as of a too impetuous Circulation in the affected Part. The Pulse ought therefore to be kept up a little higher than its natural Strength.

Q. 21. When is an Abscess to be opened for the Discharge of its Matter?

A. As Suppuration is a Dissolution of the dead and impervious Vessels, together with the Humours, into a mild Cream-like Matter; and as this Matter corrupts and becomes acrimonious if too long confined, so as to become attenuated and absorbed again into the Mass of Blood; therefore in most Cases we ought not to wait for a spontaneous Rupture of the Skin or incumbent Fat, which ought to be incised, in order to discharge the Matter, and prevent it from spreading into the neigh-

neighbouring Parts : but, on the other hand, in some Cases it is advisable to continue the Suppuration, till the Hardness, which is perceivable round the Tumor, abates ; because if the Abscess is opened before this Hardness is resolved, it may continue crude and stubborn, disposing the Parts to be fistulous, when it might have been more easily dissolved by a longer Continuance of the confined Matter.

Q. 22. Is the Matter of an Abscess always to be brought to a State of Maturity before the Apertion ?

A. This cannot be allow'd in some Cases ; as when there is Danger of the Tumor's breaking into the Thorax, Abdomen, or some other important Cavity, as into that of a Joint, &c. where the spreading Matter might do great Mischief, unless it is immediately discharged.

Q. 23. In what manner do you open an Abscess ?

A. By Incision, except some large Blood-vessel is near, or when the Patient will not submit to the Knife ; or in case of a venereal Bubo or scrophulous Tumor, and then Caustics often take place of the Knife to advantage ; observing to make the Opening always in the most favourable and depending

ing Part, to facilitate the Discharge of the Matter, and always preferring the Knife to the Scissors, as the last pinch and contuse the Parts which they divide.

Q. 24. What Caustic do you prefer, and under what Circumstances is it to be used?

A. For destroying scrophulous and venereal Indurations of the Glands, which will neither discuss nor suppurate, and to expose a carious Bone, or open an Abscess, the best Caustic in use is the common Lapis infernalis of the Shops, mixed with Soap, and applied after the Part has been covered with a defensative Plaster, having a small hole in it, to limit the Action of the Caustic upon the Skin: and in this manner the Caustic may continue upon the Part about five or six hours, to destroy a large Gland; to expose or lay a Bone bare, about four hours; and for opening Abscesses, one, two, or three hours, according to the thickness of the Skin, and other Circumstances.

Q. 25. How is an opened Abscess to be dressed and treated, in order for a Cure?

A. For the first time it may be dressed with dry Lint only, or with soft Digestives spread on Lint, if there is no Hæmorrhage. Over the Dossils of Lint may be laid a large Pledget of Tow spread with Basilicon, which
lies

lies much softer than a defensative Plaster, which frequently inflames the tender and naked Parts. The same Dressings are to be continued with a proper Regimen, till the Cavity is incarned by Nature, taking care to let the Dressings, particularly the Bandage, sit as loose and easy upon the Part as possible; and in the next place it may be cicatrized when filled up, by the application of dry Lint or desiccative Powders, always keeping the Margin clean and free from fungous Flesh, by making a moderate Compressure with dry Lint, or by levelling the Surface with *Vitriol. Rom. vel Merc. præcip. Rub. &c.*

Q. 26. How often are the Dressings to be renewed?

A. The Repetition of the Dressings must be proportionable to the Quantity and Nature of the Discharge; for if the Matter is mild and small in quantity, once dressing in twenty-four hours will suffice; but sometimes two or three Dressings are required in that time, especially in hot Weather.

Q. 27. What is an *Erysipelas*, and wherein does it differ from a Phlegmon?

A. An *Erysipelas* is an Inflammation in the serous Vessels, as a Phlegmon is in the sanguiferous; being most frequently seated in

in the Skin, and other membranous Parts of the Body. An Erysipelas inclines to a deep Orange-colour, wanders from one place to another, does not tend to Suppuration, but frequently terminates in Vesicles or Hydatides, containing a sharp serous Liquor, in the Skin of the Face, Neck, Shoulders, &c. and being pressed with the Finger, its Colour disappears, and then returns; which make the principal Marks whereby it is distinguished from a Phlegmon, which is rather confined to the adipose Membrane. Hence it is evident, that an Erysipelas may turn to a Phlegmon, or rather be intermixed with a Phlegmon, whenever the red Blood escapes into the serous Arteries, and propagates the Inflammation, not only through the Skin and smaller Vessels, but likewise into the adipose Membrane. This Inflammation generally invades with a shivering and slight Fever, after some Surfeit, violent Exercise, hard drinking, or taking cold, &c.

Q. 28. How do you treat an Erysipelas?

A. With Bleeding, Purgings, Diet and Internals as in a Phlegmon. Externally emollient Fomentations may be applied, which relax the Skin, take off the tension and abate the Inflammation. The Blisters should be cut when they arise, and dress'd with the *Cerat. Commun.*—In the Face how-

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In

ever it is judged most prudent only to embrocate with warm Milk five or six times a day.

Q. 29. What kind of Tumor is an *Oedema*?

A. This Term originally signifies any soft pitting Tumor; but at present we make two kinds of it, namely, the *Oedema calidum* and the *frigidum*; though the latter is most commonly intended by the term *Oedema*, when used without farther distinction.—An *Oedema calidum* is then an Inflammation seated in the lymphatic Vessels, as an Erysipelas was seated in the serous ones; from whence it appears to differ only by being seated in smaller Vessels. As a Phlegmon is frequently intermixed with an Erysipelas, so an Erysipelas frequently joins itself with an inflammatory or hot *Oedema*; and in this shape it often appears in the Head and Face under the Title of *Gutta rosacea*. It is to be treated as an Erysipelas (Q. 28.)

Q. 30. What do you understand by an *Oedema frigidum*, or an oedematous Tumor?

A. I understand by it in the common acceptance of the Term, a cold, indolent, and soft or pitting Tumor, from watery Humours distending the cellular Membrane, without
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any alteration in the Skin, except a shining Tensity and Smoothness.

Q. 31. What are the principal and immediate Causes of these oedematous Tumors?

A. They proceed immediately either (1.) from a too poor or dissolved State of the Blood, when there is too great a proportion of Water and Serum in it, and too great a Laxity of the Vessels: the former from hard Drinking, Fevers, Hemorrhages, and Suppression of the Menfes in Women; and the latter from a too great Weakness of the Vessels, and too low an Impulse of the Heart and Arteries, as in old People; or (2.) from a sedentary Life; to which add a Compression of any of the Veins, as of the Iliacs in Women with Child: a schirrous Tumor in the Abdomen, an Obstruction of the smallest lymphatic Veins by intense Cold, &c. Hence it appears that an Oedema is an Anasarca or kind of Dropsy in a particular Part; and when accompanied with Heat or Redness in the Skin is an *Oedema calidum*.

Q. 32. How do you treat an *Oedema frigidum*?

A. For the Cure of this Tumor, a Regard must be had to the immediate Causes (Q. 31.) in the Body; in case of Weakness and old Age, or a dropical Disposition, pro-

per Corroborants and Cardiacs, especially of the aromatic and diuretic kind, are to be given internally, while externally are used Frictions with warm Cloths often repeated, moderate Exercise gradually increased, the Application of strait Stockings or Bandages, after the Legs and Feet have been fomented with *aq. calc. & alcohol. vini ā ā ʒjv. alumen. rupei ʒj.* at the same time making a proper use of Chalybeats with the Bark, according to particular Exigences, beginning with small Doses, and gradually augmenting them; but not too hastily, which ought to be particularly observed in all cachectical or leucophlegmatic Habits, to avoid greater Mischiefs. When the Tumor does not yield to these Applications, if the Swelling is very considerable, and the Patient's habit of Body and Strength will permit it; relief may be afforded, by the Application of Vesicatories, or making Punctures, to discharge the Water, from the adipose Cells; but Care must be taken to prevent a Gangrene by the Application of Fomentations and warm Digestives.

Q. 33. What do you understand by a *White Swelling*?

A. This is an oedematous Tumor in the Joints, without Heat or even Pain at first, arising up after being press'd by the Finger like a Sponge, and seldom appearing but in the
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the Knees or Ancles. The Nature of it is the same with an Oedema (Q. 30.), excepting that in these Joints the cellular Membrane and lymphatic Vessels are interwoven with many tendinous Fibres and Ligaments. It arises chiefly from a cachectical Disposition in relaxed or scrophulous Habits (mostly of Children), joined usually with some Violence or Strain offered to the Joint itself. The Bones here seldom continue sound long, but are usually affected, together with the surrounding Parts, as in a *Spina ventosa*, from the Acrimony of the confined Lymph and Matter in the cellular Membrane; and it is accompanied with a wasting of the Limb below.

Q. 34. How do you treat the *White Swelling*?

A. As it proceeds principally from a bad Habit in general, recourse must be had to proper alkaline, aromatic, and corroborating Medicines internally, the burnt Sponge with the *panacea Plumeri*, *aqua benedicta*, &c. while externally are applied the topical Medicines before recommended for an Oedema (Q. 32.) But when the Tumor is large and inveterate, we too often find it inflexible to all Means. Emollient and antiseptic Applications commonly increase the Disorder; or even if Incision is made through the Integuments to let out the distending Humours contained in the Joint, which should not

be done till Nature points the way and would do it soon herself, the Tumor commonly returns again as soon as the Wound is healed: but this is the only Means we have, in order to reduce the Tumor, by discharging the Humours from the Cavities of the Joint and cellular Membrane, to compleat which a strict Bandage is to be applied. Some indeed prefer opening the Tumor by Caustic, but both this and the Knife require great Caution in their Use and Application to these tendinous Parts; and even when the Opening is thus made in a bad Habit, it too often ends in a Caries, Fistula, or Gangrene of the Joint, which destroys the Patient,

Q. 35. What are the Effects of an irrefol-
vable Inflammation which does not tend to
suppurate?

A. In this Case the Humours are inspissated, turned into a Solid, and concreted together with the Sides of their containing Vessels, which then become as so many dead and foreign Bodies, more or less injuring the Nerves, and other adjacent living or pervious Vessels. Therefore the Effect of such an Inflammation (if in a moderate degree) will be, in the Substance of the Bones, an Exostosis or Node; in the Glands, Scirrhi, incysted Tumors, Cancers, Buboës, Strumæ, &c. in membranous Parts, and in the Skin, Callosities, Warts, Corns, &c. Ganglions in the
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Tendons.—But if it afterwards tends to ulcerate, from thence follows in the Skin lepro-
rous Disorders, Boils, scald Head, &c. in
the Bones a Spina ventosa, in a glandular
Part a Cancer, &c.

Q. 36. How does an irresolvable Inflammation terminate, when it is more violent, in a fleshy Part, and does not tend to suppuration?

A. The Event will then probably be a Gangrene or Sphacelus, a Caries of the Bones, or a malignant Ulcer, &c.

Q. 37. What is a Scirrhus?

A. This is a hard, unequal Tumor, with little or no Pain, seated in some glandular or membranous Part, formed by an Inspissation of the Humours, obstructing the excretory Ducts of the Gland, and distending the membranous Follicles or Cells thereof, while the more fluid Parts of the Humours are drained off or exhaled. Thus an Inflammation only in such a Part, over-distending the Arteries, will compress the excretory Ducts, while the Humour is poured in too fast to pass through them; whence a Retention, Accumulation, Inspissation, &c. until the Cells of the Gland are distended almost to any given degree, so as to compress most

of the interspersed Nerves and Blood-vessels in the Substance of the Scirrhus.

Q. 38. What Parts are most liable to this Disorder?

A. Chiefly those membranous and glandular Parts which supply a viscid Humour, much inclined to inspissate and harden; as in the Eyes, Nose, Mouth, Breasts, Armpits, Groins, Testicles, Stomach, Bladder, Pancreas, Mesentery, Uterus, &c. The Dangerousness and Symptoms of which vary according to the Nature and Importance of the Part, which is itself Scirrhus; and of those Parts liable to be compressed or injured by its Vicinity, and as it may in time degenerate into the most dreadful of Disorders, a Cancer.

Q. 39. How do you treat a recent Scirrhus in a good Habit of Body?

A. I first attempt to disperse it by Mercurials prudently used, accompanied with a strong Decoction of Sarsaparilla, and chiefly by Unction, with very moderate Frictions and lenient Purges repeated at discretion; cautiously avoiding all violent Means at first, which would rather confirm than dissipate the Disorder.—If these Means fail, and the Disorder is local, and not likely to return in other Glands, at the Patient's Desire I extirpate it
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by the Knife, when that can be safely done ; or if there is a Tendency to Suppuration after a Fever or Inflammation, even in scrophulous Indurations, I sometimes apply the Caustic with success.—But if the Scirrhus is inveterate, and appears from its Colour, Pain and Itching to be malignant ; and if the Patient's bad Habit and its Situation forbid an Extirpation of it, in that case all caustic, suppurating and heating Medicines, both externally and internally, must be cautiously avoided to prevent a Cancer, and recourse must be had to Anodynes and Coolers, as well externally as internally.

Q. 40. Do you approve of Caustics to destroy a Scirrhus ?

A. These irritate, and often threaten a Cancer very much ; and therefore the safest and speediest way to remove a large or painful Scirrhus, is to cut out the indurated Part entirely by the Knife, provided one can do it without leaving any Remains, or risking a fatal Hæmorrhage. What has been said of Scirrhi is also true of Strumæ, or scrophulous Indurations of the salival and lymphatic Glands ; which yet I have known well destroy'd by Caustics in young Patients.

Q. 41. What is the Nature of a Cancer ?

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A. From what was said of a Scirrhus (Q. 37.) it is evident that a great part of it is a dead or foreign Body impervious to the Circulation, though at the same time there are many pervious living Vessels and Nerves interspersed on the Surface, and through the Substance of the Scirrhus; so that when these living Vessels and Nerves upon the Surface are inflamed and irritated, so as to become painful from any Cause, the Scirrhus is then termed a latent or *occult Cancer*; and if this Inflammation continues so as to destroy the Vessels, and break through the Integuments, by a sharp corroding Ichor, it is then termed an open or *ulcerated Cancer*. Hence it is evident, that every thing which irritates a Scirrhus externally, or which increases the Circulation too much, whether Plethora, Obstruction or Acrimony from more remote Causes, may turn a Scirrhus into a Cancer.

Q. 42. How do you know an *occult* and an *ulcerated Cancer*?

A. A *latent Cancer* is discovered from a Scirrhus preceding, and being followed with a Titillation, Itching, and a slight or more intense Inflammation and Pain; the Tumor in the mean time enlarging, while the adjacent Blood-Vessels appear more conspicuous of a livid Colour, and distended with Knots
or

or Varices.—But if after these Appearances the Skin breaks, and discharges a corroding Ichor, I then know it to be an ulcerated Cancer; which is more or less malignant, as the Ichor is more corroding, foul and cadaverous; as the Roots spread, and the Lips turn back more on all sides; as the Pain is more burning and intolerable, and the Colour more livid or black. This at length induces occult Caners in other Parts, fatal Hæmorrhages, Convulsions, Fever, Wasting, Loss of Smell, &c. ending at last in Death, of which the Patient is made very desirous by the direful Symptoms.

Q. 43. How do you treat an *occult Cancer*?

A. Unless it can be extirpated by the Knife, or cast off by a laudable Suppuration, as very rarely happens, a Cancer admits of no Cure but what is palliative. But above all, Care must be taken not to render a latent Cancer ulcerated, by the Application of emplastick, suppurative, acrid or caustic Substances. Unless therefore there is a probability that the Cancer may be removed without a Return of the Disorder in other Parts, it ought not to be treated either by the Knife or topical Medicines; but I rather endeavour to keep the Disorder quiet, and to mitigate the Symptoms: namely, by saturnine and
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narcotic Medicines externally, a frequent use of lenient Purgatives, with Mercurials, diluent and aperient Medicines internally, avoiding every thing that disturbs the Sedateness and Equability of the Circulation; and by the same Means the Symptoms will be also mitigated, calling in the Assistance of Opiates when necessary and frequent bleeding. The same Methods are to be used also to palliate an ulcerated Cancer, when it cannot be extirpated. It is proper however to observe that the Use of an Extract of the *Cicuta Vulgaris*, or common Hemlock made into Pills with the Powder of the Leaves has been lately extoll'd and recommended by Dr Storck, an eminent Physician of *Vienna*, who has given it in Doses from gr. 4, to 20 or 30 in a Day, for a considerable length of time, without any prejudice to the Patient, and sometimes with amazing success, as appears by an accurate History of Cases published by him. However, it has not been attended in the Hospitals in *London* with that success our sanguine Expectations formed, on the first Publication of his Cases, though there are undoubtedly instances of its having dispersed some strumous and schirroustumors, which have resisted all other means; and also of some inveterate foul scorbutic Ulcers, having grown better, and sometimes been entirely heal'd by the continued use of the Pills internally,

ternally, and the external Application of the Cataplasm and Fomentation made of the Leaves, &c. For the Form of which extracted from *Storck*, see the Index of Remedies hereafter inserted.

Q. 44. As you mentioned some Parts that are most liable to schirrous and cancerous Disorders in Q. 38. let us pursue the Subject, and therefore tell me, How would you treat a Cancer of the Breast?

A. There are two Methods of Treatment, 1. when it will admit of an Attempt for a perfect Cure by extirpation, in which Case, the Operation is to be preferr'd to any other means of destroying the diseased Glands. The Manner of performing which, will be described amongst the Operations. This to be accompanied at the same time with the use of proper internal Remedies and a proper Diet, as in Q. 43. for correcting the vitiated Humours. And the Cases in which the Operation may be recommended and used, are when the Tumor is moveable, and its Adhesions near any large Vessels capable of being separated by the Knife without danger of an unconquerable Hæmorrhage; the Patient of a Constitution and Age favourable to the Operation, and willing to undergo it; where there is reason to believe the Disease is principally, if not entirely local,
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and that a Return of the cancerous Disorder may possibly be prevented by a proper Regimen of Diet and Medicine.——But in case the Tumor is fixed to the Ribs, accompanied with a great many livid Tubercles and glandular Swellings, stretching under the Axilla and an oedematous Swelling of the Arm on that side; the Patient much in Years and weak; the only means to be used then is to endeavour to palliate the Disorder by such a Method as is recommended in §. 43. at times having recourse to the Lancet, where the Patient is plethoric and the Constitution will bear it. In respect to Hæmorrhages that happen from ulcerated Cancers, as they are generally from the Mouths of the capillary Vessels that are corroded by the Sharpness of the Ichor, and discharge with them a great deal of the vitiated Blood and serous Humours in and about the Part, they are generally productive of Ease for some time afterward to the Patient; and therefore no styptic Applications should be made use of, which by their Astringency lock up the Mouths of the Vessels, and if they succeed (which they rarely do) in stopping the Hæmorrhage, the Patient suffers intolerable Pain from the Acrimony of the confined Blood and Humours, which in a few days again destroying the Coats of the Vessels, Nature is once more relieved for a time by a
fresh

fresh Hæmorrhage. But where there is such an Effusion of Blood as to alarm and endanger the Patient, the Application of thin pieces of soft Sponge to the Mouths of the Vessels, is the best Method, for as it will permit the thinner and sharper Parts of the Blood to pervade through its Texture, so the Coagulam form'd from the thicker part choaks up the Mouths of the Vessels and restrains the Efflux of Blood. When a Vessel is so large as to require a Ligature, as no hold of that kind can be depended on from the putrefied state of the parts, if the Application of Spunge, or the Agarick does not succeed, Recourſe must be had to the actual Cautey, which is the last Resource.

Q. 45. How do you treat a Cancer of the Lip?

A. The Nature of this may be understood from what was said before of Cancers, Q. 41. & seq. and when it does not yield to those Methods, I extirpate the cancerous part by the Knife, observing rather to take away some of the sound Parts than to leave the least bit of the Cancer remaining. The same must be done in any part of the Face where the Situation will permit of it, and where the Patient will not submit to the Operation, tryal may be made of the escharotic Powder called *Plunket's Powder* in the Index of Remedies,

dies, which is said to be the same or nearly so, as that purchased from him by Mr Guy, and is reported to have succeeded very well in some Cases, but in real Cancers little is to be hoped for from this or any other Medicine.

Q. 46. How do you treat a Cancer of the Tongue?

A. In the same manner as the Lip, and where it does not give way to the Remedies recommended, I extirpate (if possible) the diseased Part by Excision, and if there is any Asperity of the Teeth that may occasion or irritate the Disorder, they are to be extracted or filed off.

Q. 47. How do you treat a Cancer of the Testicle?

A. This Disease is generally the Consequence of a *Sarcocoele*, or swell'd Testicle from Inflammation, which not being discuss'd becomes schirrous, and afterwards degenerates into a Cancer. When that happens nothing but the Operation of Castration can possibly be of any service, and that is only to be performed where the Hardness and Enlargement of the Chord is restricted to some space below the Rings of the abdominal Muscles, and the Patient of a Habit
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of Body that will admit of hopes that the Cancer will not return or fall on some other part. The Method of performing the Operation you will see in its place.

Q. 48. What kind of Tumor is a *Bubo*?

A. This is a painful and inflammatory Swelling in the inguinal and subaxillary Glands, tending either to a Suppuration or a Scirrhus. It is distinguished into *critical*, which happens after a Fever; *pestilential*, which happens in the Plague; and *venereal*, arising with or without a Gonorrhœa in the venereal Disease.

Q. 49. How do you treat a *Bubo*?

A. As for critical and pestilential Buboes, the best Method is to promote and bring them to Suppuration as soon as possible by Cordials internally, with suppurating Cataplasms, or a warm Plaster externally: but for venereal Buboes, if they are not too far gone, I attempt to disperse them by mercurial Unction, with Bleeding, Purging, and a Decoction of the Woods drank plentifully, keeping the Patient in a cool Regimen: if the Dispersion does not succeed, I endeavour to promote a Suppuration by high living, dry Frictions upon the Part, a maturing Cataplasm often applied warm, and a warm Plaster as before, till the Suppuration is well

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advanced;

advanced; and then I make an Opening either by Incision or Caustic, preferring the latter when there is any remaining Hardness, and compleat the Cure by deterging with some digestve Ointment, mixed with a little Merc. præcip. then incarn and heal as in other Abscesses.

Q. 50. How do you distinguish *incysted Tumors*?

A. These are Tumors formed by an Obstruction of the lymphatic and other Arteries in the Gland, and in the adipose Membrane; being usually covered with a pretty thick Coat or Membrane, with which most Glands are invested, and which is often distended to an immense Bulk by the included Humours inspissated and reduced to a certain Consistence; from whence the Tumor is denominated either a Scirrhus, when it is very hard; an Atheroma, when the included Matter is like Paste; a Steatoma, when it resembles Suet or Lard; a Meliceris, when it resembles Honey; and a Sarcoma, when it appears fleshy: though these Tumours, as *Celsus* (*Lib. 7. cap. 6.*) observes, are often found full of Hair. These differ from a true Scirrhus, in that the vascular Fabric of the Gland (when that forms the incysted Tumor) is dissolved by the Humours into a thick inorganised Matter or Paste, confined within the

the Follicle, (a muscular and vascular Membrane investing all compound Glands, to enable them to urge forward their contained Fluids) which becoming thicker and harder forms the Cyst of the Tumor: whereas in a Scirrhus, properly so called, the organic, nervous, and vascular Fabric remains undissolved, and is therefore capable of Irritation and Pain, so as to form a Cancer; but in the incysted Tumor there is no Sense at all, except in its Follicle or including Cyst. The interior Surface of the Cyst being spread with the Mouths of the dissolved Vessels, many of which remain pervious, continually ouze a lymphatic Humour into the Cyst, (when there is a Redundancy of Fluids and a strong *Vis Vita*) which thus gradually dilates and thickens, while the Humours are inspissated and digested into a Mass like the rest: but they do not tend to suppurate or form laudable Matter; for that requires a greater degree of Inflammation, and that the Humours be not lymphatic but sanguineous; and here the aqueous Parts are drunk up by the venal Mouths, as fast as they are pour'd in by the arterial, the grosser Parts of the Lymph remaining, and thus the Tumor will enlarge almost to any given Size.

Q. 51. How do you treat these Tumors?

A. You may endeavour in the beginning

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to discuss them, by Frictions with Mercurial Uction, and wearing a Mercurial Plaster, which sometimes succeed; or by the Use of the *Cicuta* internally and externally, as directed *Q. 43.* If they cannot be dispersed, you may endeavour to suppurate them by Application of maturative Cataplasms and warm Plasters, and that also failing, you must extirpate them if their Situation will admit of it by the Knife, taking care to leave none of the Cyst behind, which if it should notwithstanding happen, must be destroyed by the Use of the *Pulv. Angelic.* and the Wound afterwards incarned and cicatrized with the usual Medicines for that purpose.

Q. 52. What is the Nature and Treatment of a *Ganglion*?

A. It is an indolent hard Tumour in a Tendon or Ligament, most commonly either in the Hands or Feet, occasioned by some Contusion or Strain, and is often very difficult to cure. It is sometimes removed by repeated Frictions and Pressure, if that does not succeed, some Authors recommend the opening of them, and say that with proper Treatment of Bandage, &c. they will heal where there is a good Habit of Body. But this is a Practice to be used with great Caution. They very frequently disappear for some time without any Application or known Cause,

Cause, but are apt to return as unaccountably.

Q. 53. What is the Nature and Treatment of *Paronychiæ*, or *Whitloes*?

A. A *Paronychia* is an exceeding painful Inflammation in the Extremity of the Finger tending to Suppuration, and is distinguished into three kinds; the first and slightest whereof is in the common Integuments and adipose Membrane round the Nail; the second kind is an Inflammation of the Periosteum, which invests and nourishes the Bone and soft Root of the Nail itself, being much more painful than the former, and not so readily coming to Suppuration; often attended with a violent Fever and other bad Symptoms, though the Pain and Tumor are confined to the Finger. The third and worst Species of the *Paronychia* is seated in the Tendons, or their nervous Involucra, inserted into the Bones of the last Joints of the Fingers; for it is remarkable, that the Tendons which bend the two last Internodes of the Fingers, are covered by strong ligamentary Sheaths almost as hard as a Cartilage; so that if an Inflammation be formed either in the ligamentary Sheath itself, in the cellular Membrane, Periosteum, or flexor Tendons, the inflamed Vessels having no room to dilate from this particular Fabric, the Pain

and Inflammation will from that Stricture be infinitely increased, and the Pain so excruciating as often to cause the most intense Fever, Restlessness, Convulsions, Delirium, &c. and tho' a little Tumor appears in the Finger, yet the whole Hand and Arm become very much swelled, and full of Pain. From both these last Species of the *Paronychia*, if neglected, and the Patient escapes with Life, there may follow a loss of the Bones corrupted with a Caries. The Cure is to be conducted according to the several Species of the Disorder; but generally in all the Species it is advisable not to wait for a Suppuration, but to lay open the inflamed Parts by Incision, to remove their Stricture, and discharge the confined Matter, if there is any, before it has affected the Bone or adjacent Parts. In the two first Species the Incision may be made longitudinally on each side the Nail, and through the Nail itself to the Bone, when the Periosteum is inflamed; but in the last and worst Species, the Incision must be made through the Integuments on each side of the Finger with a Lancet, so as to divide the ligamentary Capsules or Sheaths, confining the Tendons close to the Bones, without injuring the Tendons themselves, as may be easily done by one versed in the Structure of these Parts. The sooner this Incision is made the better, and afterward the

the Part may be fomented with a discutient Fomentation, in which S. V. may be inserted, and then dressed with warm Digestives, and wrapt up in a Pulvice of Bread and Milk, with some Oil or Lard in it to keep it moist. The Patient may be bled in the other Arm, and a cooling Purge given as in other Inflammations; if any danger of a Gangrene should arise, the Pulvice may be changed for one of Oatmeal and stale Beer, or the Theriaca Londinensis applied, and internally the Bark administer'd as directed in Gangrenes. If the Pain and Tumor do not go off after making Incision through the ligamentary Capsule of the Tendon, it is a Sign that the Inflammation extends farther, and that the Capsule of the second Internode must be likewise divided; and sometimes it is necessary to continue the Incision into the Hand itself, or even to the annular Ligament of the Carpus.

Q. 54. What is the Nature and Treatment of a *Furuncle* or Boil?

A. This is a very painful and inflammatory Tumor of the Skin and cellular Membrane, tending to Suppuration, and proceeding mostly from an uncommon Acrimony of the Humours; They should never be dispersed, but brought to Suppuration, by warm Plasters and emollient Cataplasms; Those in Children are often very stubborn and troublesome,

blesome, unless the acid Acrimony of their Humours is obtunded by Absorbents, mild Bitters, and soapy Mixtures.

Q. 55. What is the Nature and Treatment of the Tumor call'd a *Carbuncle*?

A. I take the Carbuncle to be of the Species of the Furuncle, but of a more malignant Nature. Its Appearance is of a shining fiery red circumscrib'd with pale or livid Lips, with a Blackness sometimes in its Centre, the Teguments round it hard, very painful, of a burning Heat, never coming to Suppuration, but the adipose Membrane sloughing and gangrening underneath the Skin. The Method of Cure is to cut out the diseased Part to the Quick, and to extract all the sloughy and gangrened Part, and by deep Incisions round the Ulcer give Vent to the acrimonious and vitiated Juices confined in the obstructed Vessels. Warm Dressings with Cataplasms of Oatmeal and stale Beer and a free Use of the Bark, with Anodyne quieting Medicines where the Pain is intense, and Cordials where the Pulse is low, are what we must principally depend on for the Cure. This Disease is always accompanied with one remarkable Symptom, that of a tasteless insipid Urine, as in a Diabetes.

Q. 56. What is the Nature and Method of curing *Wens*?

A. These are soft fleshy Tumors, or rather

ther Productions of the true Skin and cellular Membrane, the Blood-vessels of which are often wonderfully enlarged, so as to produce these Tumors of various Forms in different Parts of the Body. They may be removed by Incision when the Basis is small and situated in no dangerous Part, and the Patient of a good Habit of Body, and very large ones may be dissected out, preserving as much of the sound Skin as possible, and securing the Blood-vessels with the Ligature.

Q. 57. What is the Nature and Method of curing *Warts*?

A. These are Excrescences of the Vessels of the true Skin, joined together with the Cuticle; the former, not being restrained by the latter, are extended for want of a due Resistance, so as to form an Excrescence, which may be taken off either by the Scalpel or Caustic, or by Ligature with a Thread or Horse-hair; or after clipping off the top of the Wart with a pair of Scissars, the Root may be destroyed by a drop of Oil of Vitriol, or Butter of Antimony. But Care must be taken to limit the Action of the Caustic from spreading to the sound Skin by a defensive Plaster with a hole cut in it.

Q. 58. What is the Nature and Treatment of *Corns*?

A. These are a sort of inverted Warts or Callo-

Callosities of the Cuticle and Skin, made by repeated Inflammation, Pressure or Attrition, which closes up the Vessels, and turns a vascular Part into a solid; and when these extend to the Tendons of the Hands and Feet, they prove extremely painful. Those of the Feet commonly arise from wearing too small Shoes, and those in the Hands seldom occur but in very laborious People. The only Remedy is by keeping that part of the Skin free from Pressure, after the Callosity has been often macerated, pared away, and softened by a constant wearing of some emollient Plaster.

Q. 59. Are not the Bones subject to Tumors, and what are the Names they are distinguished by?

A. They are; and they are known by the Names of *Exostosis*, *Spina Ventosa*, *Tophes*, *Nodes* and *Gummata*.

Q. 60. What is an *Exostosis*?

A. This is properly a Luxuriancy of the Callus in a fractured Bone, or a hard bony Excrescence answering to a Sarcoma in the soft Parts; and this sometimes happens as well without as with a Fracture, when the nutritious Vessels of the Bone being dilated, cause an Enlargement either of its whole Substance, or of some part, by distending the Lamellæ, betwixt which those Vessels are distri-

distributed. And although these Exostoses or Nodes most frequently arise in the venereal Disease; yet they also sometimes proceed from external Injuries, as a Contusion upon the Shin or Spine of the Tibia. These Tumors are hardly to be removed but by cutting off the Excrescence equal with the Surface of the Bone, then waiting or procuring an Exfoliation and Renewal of the Periosteum, as in other exposed Bones.

Q. 61. What is the Nature of a *Spina ventosa*?

A. This is a Caries and Enlargement of the Bone from an internal Cause, namely, an Inflammation in the internal Periosteum and Medulla, ending in a Suppuration. This is discovered from an Inflammation having preceded in the Bone, from an Enlargement of the Bone itself, with a throbbing Pain, and often a Discolouration of the superincumbent Parts. The white Swelling, in the worst degree, is a *Spina ventosa*; only arising from an Erosion of the Heads of the Bones in the Joint externally by the acrid Lymph, Synovia, or confined Matter in the Cavity of the Joint and cellular Membrane.

Q. 62. How do you treat a *Spina ventosa*?

A. The only Means of relieving the *Spina ventosa*, is to make an Opening the nearest

est and safest way through the soft Parts into the Bone itself, which may be perforated either by the Trepan or Chissel, as shall appear most convenient, in order to discharge the corroding Sanies, which may be washed out by suitable Injections into the Cavity of the Bone, while the Patient is kept upon an acefent and milk Diet, and treated with internal Medicines which resist Putrefaction; and unless this can be done, nothing remains capable of saving the Patient except an Amputation; nor even will that suffice, if the Disorder, proceeding from a venereal, scorbutic or rickety Disposition, breaks out again in other Bones.

Q. 63. What are *Tophes*, *Nodes*, and *Gummata* of the Bones, and how do you treat them?

A. These are Tumors or Excrescences of the Substances of the Bone itself, differing only in degree of Hardness: thus a Node is little inferior in Hardness to the Bone itself; a Tophe is still softer like Horn; and a Gumma is even susceptible of the Impression of the Finger, like the soft Gums. In these Cases there seems to be a Deficiency of the cretaceous Earth, with which the Bones ought to be supplied, to give them a due Firmness; and of this we have frequent Instances in venereal, scorbutic and rickety Patients,

Patients, in which the Bones have degenerated into a soft and even fleshy Nature, which is then termed *Osteosarcofis*. The venereal ones will sometimes disperse by Salivation, or the Use of the Uction with the *Decoct. Sarsaper.* but where they are of long standing they require to be open'd and treated as a carious Bone.

Q. 64. What is an *Emphysema*?

A. This is a Tumor from elastic Air collected in the cellular Membrane, which is sometimes inflated, after the manner used by Butchers to make their Meat appear fat: thus when the Integuments of the Skull have been wounded, the Air contained betwixt the Plaster has insinuated itself into this Membrane, and spread itself all over the Face and Eyes, so as greatly to disfigure the Patient, and prevent the Eye-lids from opening: but above all, these Tumors happen most frequently in Wounds penetrating the Thorax, when the Air confined in that Cavity is forced into the cellular Membrane next the Pleura and intercostal Muscles. In this Case the contained Air is to be brought to the Opening by Pressure with the Hands, and by the Application of suitable Compresses and Bandages; or an Incision must be made through the Integuments in the most commodious

modious Part, to make a way for the Air to be pressed out.

Q. 65. What are the Names of those Tumors, whose Contents are Water?

A. Anasarca; Ascites and Hydrocele.

Q. 66. What is an *Anasarca*?

A. The Anasarca is properly a Tumor of the cellular Membrane distended by Water, distinguished by the Sight and Touch. The whole Body is bloated and considerably larger than in a natural State; the Colour of the Skin is paler than usual, and upon pressing the Finger on any Part the Impression remains for some time. As this Disease is chiefly the Province of the Physician, I shall not enter into a Discussion of its Treatment, but confine myself only to the Assistance it may receive from Surgery. Therefore when it is judged necessary to discharge part of the Water by a Chirurgical Operation, it is performed by making one or more Incisions into the Integuments, deep enough to penetrate into the adipose Cells, which are the Receptacle of the Water; or rather as these Incisions are apt to gangrene, and sometimes weaken the Patient from the Soreness and great Evacuation of Water, it is better to make Punctures with a Scarificator or Lancet in the lower and inner Part
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of the Legs, which will heal easily in two or three Days, and procure a very great Discharge tho' more gradually. The Penis and Scrotum sometimes are very much enlarged, in which case small Incisions will relieve greatly and discharge abundance of Water: after the Operation they may be dressed with Digestives, and when the Dressings are removed, an Application of two or three Cloths dipped in some warm Fomentation will be of service to corroborate the Parts.

Q. 67. What is an *Ascites*?

A. An *Ascites* is a Tumor of the Abdomen which is extended in a Dropsy by Water diffused into and filling its whole Cavity. In this Disease you may easily perceive the Fluctuation of the Water, by laying your Hand on one side of the Belly and striking lightly with the Fingers upon the other. The Navel protuberates, whereas in the *Anasarca* it is sunk in. When the Belly is very full Respiration becomes difficult by the Diaphragm being deprived of its free Action from the Resistance of the Water. In that case when the Waters cannot be discharged by physical Remedies, it is usual to have Recourse to a Surgeon to evacuate them by means of an Operation called *Paracentesis*, the Description of which you will find among the Operations.

Q. 68.

Q. 68. What is the Nature and Treatment of the *Hydrocele*?

A. This is a dropfical Tumor of the Scrotum, in which the Water is either confined within the cellular Membrane, or extravasated in the Tunica vaginalis, being easily distinguishable from each other by the Touch. It may be known from a Rupture or Sarcocoele, by a Tension and Fluctuation easily distinguishable; besides which it is smooth and the Tumor is bounded some Distance below the Aperture through which the Spermatic Vessels pass. In a Rupture the Intestine or Omentum form the Swelling, and are soft and pliable (if not inflamed) uneven in their Surface, particularly the Omentum, and extend quite up into the Abdomen. In the Sarcocoele, the Tumor is rounder, and if not accompanied with an Enlargement of the Spermatic Vessels, the Cord may be easily distinguished between the Swelling and Abdomen, besides which the Pain and great Hardness discover it to be a Disease of the Testicle. If the Disorder is local, or confined within the cellular Membrane to this Part only, it will be convenient to discharge the Water by an Incision continued to the length of two or three inches on each side the Scrotum into that Membrane; otherwise if the Distension is not great, and the Disorder an universal Anasarca, it may be as convenient
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to scarify the Legs, and make a Drain for the Water that way. But even when the Water is collected in the Tunica vaginalis, if accumulated to so great a quantity as to be very troublesome, it may be better discharged by making a Paracentesis with the Lancet than by the Trochar, dividing the Scrotum in its lower Part, and not with too long a Lancet for fear of wounding the Testicle. This is called the palliative Cure, and is the most usual Method of treating them; but where the Patient is desirous of a radical Cure and is of a good Habit of Body and proper Age, it may be attempted by an Operation, which will be described hereafter in its place.

Q. 69. What are the Names of those Tumors whose Contents are Blood?

A. The *Aneurism* and the *Varix*.

Q. 70. What are the Nature and Signs of an *Aneurism*?

A. An Aneurism is a soft and usually a throbbing Tumor full of Blood, formed either by the Dilatation or a Division of an Artery; which first denominates it a true, and the latter a spurious Aneurism. A true Aneurism is known by its having always a Pulsation in some Part or other, disappearing
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by Pressure, and returning again afterwards; but a Spurious Aneurism is when the Artery, being divided, extravasates the Blood betwixt the Muscles and Integuments, whence the Part appears livid, distended with little or no Pulsation, but intense Pain and an extraordinary Swelling, tending either to Abscess or Mortification. Internal Aneurisms are commonly formed by too great a Distension of the arterial Coats by some Strain or other Violence, whence as the internal Coat will not dilate so much as the external, by the bursting of the internal Coat, the exterior Parts are extended into a Tumor, till suddenly breaking, a Period is instantly put to the Patient's Life; whence it is evident, that no Relief can be given in this Case, but by keeping the Force of the Heart and Arteries low by frequent Evacuations of all kinds, especially bleeding every Month or Fortnight, or oftener; and feeding on a poor and spare vegetable Diet, avoiding all Passions, Exercise, spirituous and stimulating Substances of all kinds, or any thing which increases the Blood's Motion. In Aneurisms of the Limbs when the Aneurism is small and recent it may sometimes be cured or at least restrained by Compression if they are seated in a Part where pressure can be continued. *Le Dran* recommends a Pellet or Piece of Lead properly



ly secured with a Bandage on the Part of the Artery which is dilated: or the Machine in *Tab. VI.* may be tried. But for the most part we are obliged to have Recourse to the Operation. The Manner of performing, which see among the Operations.

Q. 71. What is the Nature and Treatment of a *Varix*?

A. The *Varix* is a Tumor formed from a Dilatation of a Vein, most frequently occurring in the Legs, occasioned either by a Contusion or Strain, or in the last Months of pregnant Women, by the Pressure of the Fœtus in Utero, impeding the Return of the Blood in its Circulation: They may be relieved (but are seldom cured) by Bandage, particularly the wearing of a strait or laced Stocking. But where there is only one Vein varicous and it is large and painful, it may be cured by tying it above and below the Dilatation as in the Aneurism. Of this species are those Tumors about the Verge of the Anus, commonly known by the Name of the Hæmorrhoids or Piles, being Varices of the Hæmorrhoidal Veins.

Q. 72. How do you define and distinguish Tumors formed by a preternatural Situation

of the soft parts, which are commonly known by the Term *Hernia*?

A. A true *Hernia* is a Tumor formed by a Dislocation and Interception of the Intestines or Omentum usually at the Navel, Inguen or Scrotum; and according to the Part where the Tumor is situated, and its particular Contents, it is variously denominated either an Exomphalos, Bubonocoele, Oscheocoele, &c. or Enterocoele, Epiplocele, Hydrocele, &c. and these again compounded make the Enteromphalocoele, Epiplomphalocoele, &c. but the most common of these is the Bubonocoele, formed by a Prolapsion of the Intestine or Omentum through the Aperture in the Tendon of the external oblique Muscle either into the Groin or Scrotum. Though these are called Ruptures, yet the Peritonæum is only dilated into a Sacculus, containing the Intestine or Omentum confined betwixt the Muscles or Tendons, where they are prolapsed.

The term *Hernia* then in general denotes a Dislocation or Protrusion of some of the soft Parts contained in the Abdomen; though 'tis commonly restrained to Ruptures dilating the Peritonæum. But it is evident the term Rupture conveys a false Idea, since the Peritonæum is only dilated and not broke. There are three places in the Peritonæum, where
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it is not defended by the abdominal Muscles, two at the Groins, where in Men the spermatic Vessels pass through in a Bundle, and in Women are transmitted the Ligamenta rotunda of the Uterus; and the third place is at the Navel. The Peritonæum lines the whole Cavity of the Abdomen on all sides, and receives the Viscera into its Folds or Duplicatures; but at the Loins, the Aorta and its Branches are placed under the Peritonæum; and therefore when the spermatic Vessels pass out through the Aperture in the Obliquus externus, they do not perforate the Peritonæum, which is there only incumbent on them, and fastened to the Tendon of the Muscle, through which the spermatic Vessels descend: but in this place there is no Muscle to support the Peritonæum, only Fat, Vessels, and Skin, which afford little or no Resistance. Now when the Peritonæum is pressed outward by a more violent internal force than is usual, it does not break, nor even dilate, except in these Parts where there is the least Resistance. When this Sacculus or Production of the Peritonæum reaches the Inguen, it is called a *Bubonocoele*, or *Hernia Inguinalis*; when it descends into the Scrotum, *Oscheocoele*, or *Hernia Scrotalis*. In the same places, namely, through the opening of the external oblique Muscle in

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Women there are Blood-vessels ascend from the Thighs to the Uterus, as there are in Men descending to the Testicles; and therefore the Peritonæum may in these places be distended in Women, as well as in Men. When there is a Tumor thus produced betwixt the Thigh and side of the Pudendum muliebre, it forms a Bubonocèle; when the Tumor descends into the adjacent Part of the Thigh itself, it is called Hernia cruralis; which has been sometimes known to descend even to the Knee, where the Tumor being opened by an imprudent Surgeon for an Abscess of the Thigh, the Intestine has been perforated, and discharged its contained Fæces. But in this Sacculus, formed by a Dilatation of the Peritonæum, there is nothing contained but what it receives from the Cavity of the Abdomen, namely, 1. The Omentum prolapsed, whence the Disorder is termed Epiplocele. 2. The Intestines prolapsed, whence the Enterocèle. 3. Both the Omentum and Intestine, whence the Entero-Epiplocele. All these prolapsed Parts in a Hernia never touch the spermatic Vessels, but descend near them in a Sacculus of the Peritonæum, while the Vessels themselves remain free, except from a Compressure by the hernial Tumor; for the spermatic Vessels take their course through the cellular Membrane, which likewise

wise encompasses the prolapsed Intestines. When this Disorder has been of long standing, the hernial Sacculus commonly adheres to the adjacent Parts, and can never be returned. The Cure consists in preventing the Intestines from descending into the Sacculus, which is performed by Compression long continued, with a suitable Truss; whence the Membranes of the Sacculus sometimes grow together, so as to cure the Disorder radically.—But although generally speaking the Peritonæum is usually dilated only at the places before-mentioned, namely, at the Navel or Groins; yet if there should be a Weakness, or less Resistance in some other part of it, from a Wound or any other Cause, it may dilate there, and insinuate betwixt the abdominal Muscles together with the Intestines or Omentum; and then the Disorder is termed a *Ventral Hernia*: and this Rupture may be justly suspected, when the common Symptoms with a great Pain and Vomiting attend, while there is no appearance of the Tumor at the Navel, Scrotum, Inguen or Thigh; for if the very smallest part of the Intestine is intercepted betwixt the abdominal Muscles, it may suffice to produce the Symptoms, with even a Mortification and Death, if neglected. In this Case therefore a Dilatation must be made, and the Intestine returned, as in other Ruptures, preventing

a Relapse by suitable Compression with the Bandage of *Tab. XIV. fig. 9.*—To these we may add some uncommon or anomalous Hernia, particularly of the Bladder.—Hernia of the Bladder were first described by *Ruyseb* * in his *chirurgical Observations*, where he tells us of a Prolapsus of the Vagina together with the Bladder, so as to afford the appearance of a Prolapsus Uteri; till at length having opened the supposed Uterus through the Importunities of the tortured Patient, it was found to be the Bladder, from whence he extracted a great number of Stones, and afterwards cured the Patient. It is indeed much more difficult for the Bladder to prolapse in Men; yet there are some Instances of this, as may appear from the History given us by *Ruyseb* ^b, of a large Tumor formed in the Peritonæum and Scrotum, by violent straining in a Retention of the Urine, from an Obstruction of the Urethra; nor did the Urine discharge itself by the Catheter when introduced, unless when the Patient compressed the Scrotum with his hand; and again, the Urine ceased to flow as soon as that Compressure was discontinued. The Bladder in the Male is placed under a Production of the Peritonæum, at no great distance from the Groin, in which is the Seat of Ruptures. If now the Bladder

* *Obs. Chirurg.* 1 & 98.^b *Ib.* *Obs.* 98.

der is more than ordinarily full by retaining the Urine too long; and if at the same time there is a Cavity, or less Resistance to it in that part where is the Seat of Ruptures, then by straining to discharge the Urine, the over-distended Bladder dilates in that part into a Sacculus without the Peritonæum, and descends in that part where the seminal Vessels descend into that Sacculus, where the Intestines usually prolapse; nor is it difficult to understand, that the Bladder, being pressed on all sides, will yield in that part where only it is not resisted. There is likewise a Species of Rupture termed congenial, which is when the Portion of Intestine or Omentum is found in contact with the naked Testicle, being contained in a Sack formed by the Tunica vaginalis testis. This though no unfrequent Disease has been distinguished only within these few Years, and is supposed to happen at the same time that the Testicle in Infants descends out of the Abdomen. Its Treatment does not differ from the common Hernia. But previous to the Application of a Truss, it is necessary to be certain of the Testicle's being in the Scrotum, otherwise it will be dangerous to apply it.

Q. 73. How do you treat the *Hernia Inguinalis*?

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A. The Operation consists in returning the prolapsed Intestine or Omentum again into the Abdomen from the Inguen or Scrotum, either by the Fingers or with Incision, and keeping them there by the application of a convenient Truss. If the Intestine has lately prolapsed, and neither adheres, nor is too much strangled or compressed by the Stricture of the abdominal Ring, so as not to make it tumefied or inflamed, it may for the most part be easily returned by the Fingers, and may be easily prevented from subsiding again by a Truss. But if as it often happens, the Intestine constricted by the Rings of the abdominal Muscles is so much inflamed and swelled, as to prevent its return into the Abdomen by the Fingers, the Passage must be immediately dilated by Incision to prevent a Mortification, which otherwise happens in a little time; and indeed the Patient will seldom submit to the Knife, before the Gangrene is too far advanced to recover the Intestine to its natural and sound State, which is commonly a mortal Case; though we have often Instances of the gangrenous Part separating, and the End of the Intestine afterwards adhering to the Wound, forms an artificial Anus. The Reduction then must be first immediately attempted with the fingers; the manner of doing which is, to place the Patient in a supine Posture,

Posture, the trunk rather lower than the Thighs; the Thigh on the diseased side elevated so as to contribute to the Relaxation of the abdominal Aperture. The Tumor then is to be gently grasped, so as to secure the Testicle from ascending, and the return of the prolapsed contents promoted by a gradual continued Pressure towards the abdominal Rings. If this does not succeed, tho' accompanied with repeated plentiful Bleedings, acrid Clysters, Opiates, Fomentations and Cataplasms, and the following Symptoms appear, viz. frequent Vomitings, severe Pain and great tension of the Abdomen, with great Restlessness and Fever; it may be proper to try the effect of the smoke of Tobacco, thrown up in great quantities, through a Machine, in the manner of a Clyster: Or, a Suppository of Salt, Honey and Aloe, boiled to a proper Consistence; which Method Mr Pott says he has known succeed, when the Operation has been judged to be the only Resource.—But as in this dangerous and difficult Distemper, to lose time is of the most pernicious consequence: If these do not quickly produce the desired effect, the Operation must be performed, the manner of doing which is described amongst the Operations.—The other Ruptures known by the name of femoral, umbilical and ventral from their Situation, require the same
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general Treatment of Evacuations and Reduction, &c. as before described; and particular methods, as follow. The femoral Rupture which is a Tumor containing Cawl or Intestine or both, is in the upper and fore part of the Thigh, and is occasioned by the Parts above mentioned slipping under the Ligamentum Pouparti or Fallopii. It must be reduced by placing the Patient in the same Position as in the inguinal Rupture, and reduced by gentle Pressure with the Fingers, observing to push it in a contrary direction to the Inguinal, that is a little toward the Pubes. In the Operation, the division of the Ligament is the nicest part, and must be performed by conducting the probe pointed Knife on the fore finger of the left hand, and dividing the Tendon with as small an incision as possible. The rest of the Operation and Dressings are the same as in the inguinal Rupture. — The exomphalos or umbilical Rupture, is a Tumor at the Navel, containing either a Portion of Intestine, Omentum, or both. In young subjects and small Hernias a Bandage worn a proper time generally makes a perfect Cure; in old persons and large Tumors it is hardly to be expected. This Rupture sometimes is irreducible by the Hand only and becomes the Subject of a surgical Operation, when the Parts are so bound as to produce bad Symptoms. It is per-

performed by dividing the Skin and Hernial Sack, so as to free the Intestine from the Stricture and enable the Surgeon to return it into the Abdomen if sound and not adherent. If mortified, the altered part must be removed and the Fæces be derived thro' the Wound.

The ventral Hernia may appear in almost any point of the fore part of the Belly, but most frequently is found in or between the Recti Muscles. The Portion of Intestine is contained in a Sack, made by the Protrusion of the Peritonæum. When reduced it should be kept in its place by bandage, and if attended with Stricture if it cannot otherwise be relieved, that Stricture must be carefully divided, and the Parts reduced to their natural situation. It will be right to conclude this subject with the following rules to direct the Judgment and Conduct of the young Practitioner. 1. That the Operation is never to be performed, but in cases of necessity from Stricture, &c. 2. That no external applications of Astringents, Causticks, &c. avail at all to a certain confirmed radical cure. 3. That the wearing of a well-fitted steel truss, after the Reduction of the Rupture, is the only remedy to be depended upon which in young Persons will frequently effect a perfect Cure, if worn constantly for a long time, and sometimes though very rarely in old Persons if the Rupture is recent.

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But admitted only as a Palliative it may be worn with little or no inconvenience, and the Patient enabled to do almost every office in Life equally well with a Person who was never afflicted with this disease. And lastly, that upon no consideration, they should be induced to try any of the Methods which pretenders to infallible cures have practised on their too credulous and unfortunate Patients; as it is the confirmed Opinion of the most experienced Surgeons, that they should be entirely exploded and laid aside.

Q. 74. How do you treat a *Prolapsus Uteri*, or bearing down of the Womb and Vagina?

A. When the Os tincæ subsides a considerable way into the Vagina, it is called a bearing down of the Uterus; but if it appears externally out of the Vagina, it is termed a *Prolapsus Uteri*, and may frequently happen from a Relaxation and difficult Labours. Whether the Uterus be prolapsed or inverted, if it be not timely reduced into its proper Situation, it soon becomes either gangrenous or cancerous from the Stricture, or from the cold Air: it should therefore be returned as soon as possible, after being fomented or treated with dry aromatic Fumes; and when reduced, it must be sustained by a Pessary made of Cork cut in the shape of a Ring, and covered

vered over with Wax, and of such a size as will not permit it to subside, being almost twice the Diameter of the Vagina. Afterwards dry Fumes of Amber, Benzoin, Mastic, &c. may be conveyed by a Funnel, or a corroborating Injection may be used of *apale. & S. V. p. a.*; to which may be added as much Smith's Forge. water, &c. provided there is no disposition to a cancerous Disorder. An Infusion of Granate-peels or Oak-bark in some Chalybeat Water may be also used as an Injection, and the *Peruvian Bark* may be given internally; and the same Means will be likewise effectual in a Prolapsus of the Vagina.

Q 75. How do you treat a Prolapsus Ani?

A. The Rectum is frequently relaxed and swelled so much with the Piles after difficult Labours, or Costiveness, &c. as to appear inverted outward, sometimes near three or four Inches; and in this Case it ought to be immediately returned after fomenting it with warm red Wine, and its Relapse must be prevented by the application of thick Compresses retained by the T Bandage. It may be likewise convenient to convey the dry Fumes before-mentioned for the Prolapsus Uteri through a Funnel into the Anus; upon which may be sprinkled likewise some
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fine Powder of Starch, with a little *Japan Earth* and *Dragon's Blood*. But if it proceeds from an Inflammation, this Powder will be better omitted, and the Disorder should be rather treated by Bleeding, Abstinence, and cooling Medicines.

Q. 76. How do you treat the bleeding and the blind Piles, with other Tubercles of the Anus?

A. The Piles we know are Tubercles of the Anus, of various Sizes, like Peas, Grapes, Walnuts or Eggs, formed by a Distension of the hemorrhoidal Vessels with Blood, appearing of a livid Colour, and extremely painful; and these are called the blind Piles; but if they break and discharge Blood, they are termed the bleeding Piles, frequently appearing in plethoric and costive People, especially in Women with Child. The blind Piles, when they are recent may be treated with Fomentations of *Flor. Sambuci* *Chamom.* in *Lact.* & *Ung. Sambuci* *Liniment.* *Hemorrhoidal*; observing to bleed the Patient plentifully at the Arm, and keep the Body laxative by *Elect. Lenitiv.* *Cass. Mann.* and other lenient Purges; and if the Excrement is hard, Hog's-lard or *Pomatum* melted may be thrown up with a Syringe, which will soften the Fæces, relax the Parts, and procure a Stool. If they are turgid and painful, Leeches may be applied to them, or they may

may be punctured with a Lancet, and by sitting over warm Water or Fomentation, a Discharge of Blood may be procured so as to give ease and abate the Swelling and Inflammation. When they are of long standing and become scirrhous, they may be extirpated by ligature, always minding to return the Pile into the Gut as soon as it is tied. In the bleeding Piles, if the Hæmorrhage is not profuse, it ought rather to be encouraged than suppressed; but if necessary it may be restrained by making revulsion by bleeding in the Arm, using a Decoct. Cort. Peruv. with Elix. Vitæ and an incrassating Diet if the Blood is impoverished, or if that does not succeed with the external aid of styptics, Recourse must be had to Ligatures upon the most considerable with a Needle and Thread, cutting off the superfluous Parts. In the same manner likewise may be removed other Excrescences of the Anus, whether under the Denomination of *Condyloma*, *Crista*, *Ficus* or *Fungus*.

Q. 77. What is the Nature and Treatment of *Fistulæ* in the *Anus* and *Perinæum*?

A. *Fistulæ*, whether in the Anus or any other Part, are callous Ulcers, as we before observed, generally proceeding from an Abscess; but both Abscesses and Ulcers without

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Callosity, when seated in this Part, are termed *Fistulae*. These *Fistulae* are of three kinds; some are critical Abscesses formed in the Fat which invests the Rectum; others proceed from the Piles ulcerating, and others again arise from venereal Causes; but from whatever Cause the *Fistula* proceeds, it must be laid open externally as much as possible throughout its whole Extent, either by the Scissars or Knife; or if the *Fistula* runs up by the side of the Intestine, the Gut must be slit up the whole Extent of the Sinus, whether that perforates the Intestine or not, that an opportunity may be given for the application of proper Remedies to the very Fundus of the *Fistula*. But it will not be barely sufficient to lay the *Fistula* open into the Gut when there is a considerable Callosity, it will be likewise necessary to cut off all the callous Parts as much as possible, which is much better than to keep the Patient in continual Pain by the use of Escharotics. If the Sinus's are too small to admit the Legs of the Scissars, they must be first dilated with Sponge-tents; nor is there occasion for any other Instrument except the Knife and Director, which of the two cuts easier than the Scissars, if it were but as easy to be managed; nor is there any occasion to be afraid of dividing the Sphincter of the Rectum, as
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Some have imagined, since daily Experience assures us it may be done without any consequent Palsy, or Incontinency of the Faces. The Abscess or Fistula in Perinæo spreading towards the Anus, commonly proceeds from a Gonorrhæa affecting the prostate Gland first, but frequently extends with Sinus's both into the Rectum and Bladder itself. In this Disease the use of the Bougie is sometimes of such benefit, as to procure a perfect Cure without cutting, by removing the Obstructions, and opening a free passage in the Urethra for the passage of the Urine; though we are generally obliged to cut out the callous Parts, and lay open the Sinusses that communicate with one another, and as most of these Cases have their origin from a venereal Taint, as before observed, it will be a means of forwarding the Cure, if Mercurials are used externally or internally, so as to occasion a slight spitting or till the Malignity is removed, when the rest of the Cure may be conducted as in other Abscesses. For the manner of making the Bougie and using of it, see the Question on the *Gonorrhæa* and *Lues Venerea*. If you should be obliged to lay open the Sinus's and cut away the Callosities the Dressing after the Operation may be Dossils of dry Lint, or dipp'd in soft Digestive laid in close, but lightly, with a Pledget of

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Tow spread with Digestive, a Compress of Linen and the T bandage, which may be assisted by a Scapulary fastened to it before and behind. See *Table XIV. fig. 9.*

Q. 78. What is an *Ulcer*, and how is it caused?

A. An Ulcer may proceed from a Wound, a Contusion, a Burn or Scald, or any Solution of Continuity occasioned by an external Cause, which either from improper treatment, the Irregularity of the Patient or a bad habit of body degenerate into foul Sores, and are then known by the common name of Ulcer. Or it may arise from some internal cause without any external violence, as is the case in Ulcers of the Tonfils from a venereal Taint; Ulcers of the Legs in Persons of cachectic and dropfical Habits, and Women subject to menstrual obstructions, &c. According to their cause and appearance they receive the different names of venereal, scorbutic or cancerous; callous, finuous, the Ulcer with Caries of the Bone, and many others, as putrid, corrosive, &c.

Q. 79. How do you treat an *Ulcer*?

A. A simple Ulcer, may by rest, a regular diet, with gentle Purges of Manna and the purging Waters, and the Application of the common Digestives of the *Basil. Nigr. or Flav.*

Flav. with a proper use of the *Precipitat. rub. corrosiv. subtilissim pulverisat.* be brought to the state of a clean Wound and will then granulate and may be cicatrized by the use of dry Lint, the *Cerat. epulotic.* and the Application of the *Vitriol. Roman.* or the *Caustic. Lunar.* if any Fungus rises which will not yield to Compression by bandage.—If the Ulcer should have callous Lips, it is then call'd a callous Ulcer, and if it has a narrow cavity or Sinus, it is called a sinuous Ulcer; and if old and the inside of the Sinus grows hard, it is called a Fistula. As these seldom if ever happen without some fault in the Constitution; whether they are venereal, scorbutic, or cancerous, regard must be had to their respective causes, which must be removed by a course of antivenereal, or antiscorbutic Medicines, or such Methods as are recommended against Cancers. If the Matter is thick, and the Sinus recent, proper Compression may bring the sides to a re-union; if the sides are thin, the orifice narrow, the matter confined and inclined to push out at a more convenient or depending part, it should be encouraged by plugging up the orifice with a Tent, and afterwards making a sufficiently large counter-opening for a free Discharge. If the Fistula is compleat the whole must be laid open and the callous parts cut away. And in the flat open callous

Ulcer, when the Matter begins to be good and the Incarnation is begun, if the callous edges do not soften and permit a Cicatrix to shoot out, they may be destroyed by the use of the Lunar Caustic, and then the Ulcer will cicatrize. In foul Ulcers attended with very fetid ichorous discharges, the use of the *Cortex Peruvian.* as given in Gangrenes, is of infinite service and hardly ever fails procuring a good Digestion in a few days. Injections are made use of in sinuous and fistulous Ulcers by some Surgeons, but in general they are at present exploded; however where it may be absolutely necessary to try them, the *Aq. Calc.* with *T. Myrrh.* or a mild Solution of *Vitriol. alb. in Aq.* may be made use of, which will sometimes deterge and dry up a small Cavity.

Q. 80. How do you treat an Ulcer with a Caries of the Bone?

A. If the Bone appears foul, which I discover by its Sponginess and Inequality to the Finger or Probe, and its dark or blackish Colour, the Periosteum being here destroyed, I immediately enlarge the Opening as far as is convenient, and then endeavour to procure an Exfoliation; to hasten which some recommend the making small holes through the carious Lamella of the Bone to the sound part underneath, and promoting the Growth of new Granulations of Flesh, from thence to push

push off the dead Scale; others recommend the use of a Raspatory to scrape the carious Bones till the sound part appears, which is to be known by the Colour, or Blood issuing; others use the actual Caustery to destroy the Caries of the Bone entirely, and dry up the Sanies; while on the other hand Mr *Sharp* disapproves of the Use of the actual Caustery, and advises the dressing the carious Bone if the Discharge is very foetid, with *T. Myrrh.* otherwise only with dry Lint, and to keep the Fungus down by Compression. If it spreads from the Edges of the Sore, it may be impeded by the Use of a flat piece of prepared Sponge of the Size of the Ulcer, rolled on with a tight Bandage. In support of this Method he alledges, that the Uncertainty we are under whether the Use of the Caustery hastens the Exfoliation or not, and the Pain it occasions is sufficient to induce the Difuse of it, and the speedy or slow Progress that we see made in the Exfoliation of some carious Bones, without being able to account for either, should make us prefer the easier Treatment of the two. If we consider all these Methods, it will appear that where it is judged necessary to do something to assist Nature; the compleat destruction of the carious Bone and drying up the Sanies, should be the previous step to making use of the Terebra, for Apertures through which Gra-

nulations may rise and push off the dead scale; which seems to carry with it a Probability, that from such a Combination of these different Methods, in the using of them with propriety, the desired end of Exfoliation may be the sooner accomplished. When the Caries affects the spongy Heads of the Bones in a Joint, the only Remedy is to amputate; or if it happens in a small Bone, as of the Carpus, Tarsus, &c. it must be entirely taken out, unless the diseased part of the Bone separates from the sound, as sometimes happens even in the larger Bones.

Q. 81. What have you observed with respect to *Ulcers*?

A. That in Women they receive an Alteration in their Appearance and the Discharge of their Matter every Month, when the Menstrues are suppressed; and that in such, as also in dropical Habits, they are extremely difficult to cure, even though assisted by proper Evacuations and alterative Medicines.—That Ulcers which have been subject to a profuse Discharge for any time, ought never to be healed up without substituting Issues and other Evacuations, repeated at convenient Intervals, to draw off the redundant Humours, and prevent them from settling upon the Lungs, &c.—That in putrid Ulcers, as well as in Mortifications, where there is a
Return

Return of foul Matter into the Blood, Acids and the use of the Bark are of the greatest service to correct the State of the Humours. —That when a considerable Pulsation and Redness appears in an old Wound or Ulcer, it often presages a consequent Hæmorrhage, especially in Women a little before the approach of their Menses.

Q. 82. What is a *Contusion*?

A. A Contusion properly is an Assemblage of small Wounds or Ruptures of the Vessels made by some obtuse Instrument, while the outer Integuments remain whole: otherwise, if the Integuments are divided, it is rather a contused Wound. It is also termed an Ecchymosis or Extravasation of the Humours into the cellular Membrane and adjacent Parts.

Q. 83. What are the Consequences of a *Contusion*?

A. These vary according to the degree of Injury, and nature of the Part injured. If it be slight or superficial, an Ecchymosis or black and blue Spot follows from the Blood extravasated, which is often dissolved into Lymph, and dispersed in time without further Injury. If an Artery be contused, a true or spurious Aneurism may follow; Varices in the Veins; Ganglions in the Nerves and Tendons, (whence a Palsy;) Gangrene, or withering in the Muscles; a Scirrhus or Cancer

Cancer in the Glands; an Abscess or Gangrene in fleshy Parts, and in the Viscera; or even sudden Death, when it proceeds from a Concussion of the Brain, as also from a Blow on the Stomach, Diaphragm, &c. in the Bones a Caries, a Laceration and Corruption of their Medulla and spongy Heads, &c. From which Considerations one may foresee the Danger and Events of Contusions.

Q. 84. How do you treat a *Contusion*?

A. I first endeavour to disperse the extravasated or displaced Humours to prevent a Suppuration; and if this is not practicable, I endeavour to promote a Suppuration, and prevent a Gangrene. The first I endeavour to procure by relaxing the Vessels in general by repeated Bleeding, with cooling Purges. For topical applications at the very beginning, in order to prevent the Extravasation as much as possible, Compresses wrung out in *Acet. & S.V. part. equal.* may be applied, or a Cataplasm of Oatmeal made with a sufficient quantity of Vinegar and softened with Oil, commonly known by the name of a cold Charge, afterwards Discutients may be used, as the *Embrocation*, *Fomentation*, and *Cataplasm*. in the Index of Remedies. If an Inflammation or Tendency to Gangrene and Suppuration appears, the Remedies recommended in such Cases

Cases are to be used as mentioned in their respective places.

Q. 85. What is a *Wound*?

A. It is a recent and bleeding Division of Continuity in any soft Part, by some hard and sharp Instrument. If this happens in a single Point only, it is called a Puncture when small, otherwise a Stab when large: and if the Division is made in a hard Part, it is called a Fracture, when from an obtuse Instrument; but when the Division either of Bone or Cartilage is made by a sharp-edged Instrument, it is commonly termed a Wound of them. Otherwise a Wound may be defined more generally any recent Solution of Continuity in a vascular Part, whether from an external or internal Cause; and in this Sense Contusions and internal Hemorrhages come under the Definition of Wounds.

Q. 86. How many Kinds of Wounds do you make in general?

A. They are primarily four; (1.) *Compleat*, where the Skin or common Integuments are divided. (2.) *Incompleat*, commonly termed an *Ecchymosis*, in which Vessels are divided, while the Integuments remain entire: and (3.) the *Compleat* are again either *Simple*, unattended with any violent Symptom; or (4.) *Complicated*, when accom-

accompanied with a Fracture, Contusion, Laceration, Poison, &c. — Wounds are again distinguished from the Part in which they are seated, as of the Integuments, Arteries, Lymphatics, Muscles, Tendons, Nerves and Viscera; of the Head, Neck, Thorax and Abdomen. Hence they are again distinguished into Curable, Doubtful, and Incurable, according to the Nature and Importance of each Part or Viscus, with the Circumstances of the Wound, &c.

Q. 87. What are the Signs and Stages of a compleat simple Wound?

A. As these are always superficial, penetrating no deeper than the common Integuments and muscular Flesh, the Symptoms which attend them while recent, in a good Habit, are (1.) a slight Hæmorrhage, which ceases as soon as the Vessels, by their contractile Nature, have their Orifices compressed, either naturally by shrinking into the divided Parts, and being secluded by the congealed Blood; or artificially, by Compressure, Ligature, Styptic, &c. (2.) As the Vessels gradually contract, the Discharge becomes by degrees less bloody and more serous; the divided Lips turn back, and become slightly inflamed usually in about twenty-four hours after its Infliction. (3.) This serous Discharge in a day or two after becomes more incrassated,

ted, but still serous, acrid, and often foetid; and this continues usually two or three days, under the denomination of Ichor; and at the same time, if the Wound be of any considerable extent, a slight Fever attends. (4.) The Discharge now (about the third or fourth day) becomes less, appears thick, tenacious, uniform, and like Cream, under the Denomination of Pus or Matter; and while this Appearance continues, the Cavity of the Wound fills up with little Granulations of the sprouting fleshy Fibres like Snails Horns, which proceed from the Circumference towards the Center, till the whole is incarned or filled up.—Thus the Progress of a Wound is distinguished into four Stages. So long as the Hæmorrhage or ichorous Discharge continues, the Wound is said to be *crude*; when an uniform laudable Matter appears, and takes off all the dead Extremities of the Fibres and Vessels which have been corrupted by the Air, it is said to be in a State of *Digestion*; and when the Surface of the Wound appears of a clean red without Inflammation, and its Cavity begins to diminish by the sprouting ends of the Fibres, the Wound is said to be in a State of *Incarnation*; and finally, after the Wound is filled up, the Skin and Cuticle, extending themselves from the Margin, by degrees spread over the whole, when the Wound is said to be in a State of *Cicatrizati-*
tion,

tion, which compleats the Cure. But these two last, namely, Incarnation and Cicatrization, take place only where there is a loss of Substance.

Q. 88. How do you treat a simple recent Wound without loss of Substance?

A. If there are no foreign Bodies to be removed, I have nothing more to do than close the divided Lips, retain them in their natural Situations, and prevent the luxuriant sprouting of the Fibres into a Fungus or proud Flesh above the surface of the Skin, whence the Part might be increased beyond its natural Bulk.

Q. 89. How do you accomplish these Intentions?

A. By a judicious and careful replacing of the wounded Lips, agreeable to the natural Uniformity of the Part, by my Fingers; afterwards by retaining them in that Posture, by one kind or other, either of the true or of the dry Suture, assisted with suitable Compress and Bandage, dressing only with dry Lint, or some mild Balsam spread on Lint, to exclude the Injuries of the Air; taking care at the same time either to bleed and cool the Patient, or to warm and invigorate, as they are either robust, plethoric, and disposed to Inflammation, or old, weak, and disposed

posed to gangrene; not neglecting a proper Diet and Regimen, if such shall be found necessary.

Q. 90. How is Digestion carried on, and of what use is it in a Wound?

A. Laudable Matter is formed of the Chyle and serous Juices, extravasated from the wounded Vessels, digested and changed by the Heat of the Part, and well secured from the external Air by some Plaster or other Dressings, otherwise it would be corrupted by the Air. The use of this Matter when laudable, is to deterge and separate the impervious, dead, and lacerated Ends of the Fibres and Vessels, that they may afterwards unite with each other; and therefore laudable Matter is so far from injuring a Wound, that it serves both to incarn and consolidate it; though some, from an erroneous Opinion of its being offensive, are so scrupulously exact in wiping it off, that they thus retard the healing of the Wound, almost as fast as it advances by Nature.

Q. 91. How is Incarnation or Loss of Substance supplied in a Wound?

A. This is not the Effect of any sarcotic Medicine, as was formerly imagined, but is produced merely by a Germination of the smallest vascular Fibres and Vessels themselves;

selves; for we see that the Vessels not only unite regularly with each other, Arteries with Arteries, Veins with Veins, and Nerves with Nerves, but also that their Branches are extended, elongated, and renewed; as when one Branch of a Tree being cut off, another grows out in its place. How Nature performs this, is not easy to say; but it seems to be a just Apposition of the earthy and gelatinous Matter, which compose the proper Substance of an animal Body: and this being applied successively to the Sides and ends of the wounded Vessels, is by degrees as it were wire-drawn or made hollow as the Vessel advances, by the Impulse of the Humours urged on behind by the Force of the Heart and Arteries. Thus may a small Artery be elongated to any degree, till it meets and is resisted by some other Vessel; but if that Vessel which it meets is an Artery, it cannot unite with that, but will turn out of the way, because of their opposite Motions and Impulse of their Humours; but it no sooner meets with a divided Vein, but they unite together, and the Humour urged on by the Artery, finds a ready Course through the Vein. And thus is the Circulation continued by new Vessels formed in the regenerated Flesh, which supplies the lost Substance; only the Vessels are fewer in proportion than at first. But the Nerves are not so per-

perfectly renewed as the Blood-vessels; and therefore such regenerated Flesh has scarce any sense of feeling.

Q. 92. What Precautions are to be taken to procure a laudable Incarnation?

A. To supply the Patient with nutritive and mild Aliments of an easy Digestion, and to regulate the Circulation of the Blood, so as to be neither impetuous nor deficient; for in the first Case the nutritious Juices will be impelled forward so swiftly and violently, that the wounded Vessels will be over distended, proud Flesh will be formed, and the Parts inflamed, or suffer a Dissolution instead of a laudable Incarnation: in the last Case, if the Humours are not impelled with a due force, the Vessels will not be renewed by them, but the wounded Lips will be pale, flabby, and disposed to Gangrene; and therefore a moderate Redness without Inflammation in the Wound, with a moderate quantity of good Matter, are the best Signs of a laudable Incarnation. From what has been said, the pernicious Effects of strong Liquors, high seasoned Foods, &c. in case of Wounds, must be sufficiently apparent.

Q. 93. How do you cicatrize the Wound, and keep it level?

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A.

A. After the Wound is filled up, I dress only with dry Lint, and use a proportionable Compressure by Bandage to keep it upon a level; or else I apply Lint spread with *Cerat. epulotic.*; observing when necessary to take down the Margin, next the Skin, by Escharotics. But no Method will suffice, without a moderate Resistance given by Compress and Bandage, which alone with dry Lint will procure a Cicatrix much more uniform and slightly, than when any Caustic, Styptic, or astringent Application is used. That the Cicatrix begins to form, I know from the spreading Whiteness and more Compactness of the Margin of the Wound advancing towards the Center, while other whitish Specks appear spreading on the Surface towards the Margin.

Q. 94. What Wounds are to be united by Suture?

A. Such only as are recent, free from foreign Bodies, loss of Substance or Inflammation: but in Parts which are very apt to contract, a Suture may be useful to retain them together, and prevent their flying back from each other.

Q. 95. What Sutures do you make use of in Practice, and how are they performed?

A.

A. Sutures are either true or bastard; the last, made without a Needle and thread, is commonly called dry, as the former is called the bloody Suture: the first is made with a Needle and thread, and the dry Suture is made with sticking Plasters. The dry Suture, absurdly so called, is only fit for superficial and even Wounds, especially in the Face, Neck, or some other Part in sight; whereas if the Wound be deep, or the Distension of the Parts great, it will be necessary to use the true Suture with a Needle and thread, assisted with Compress and Bandage. The dry Suture then is made with Diachylon or Diapalma Plaster, mixed with a little Turpentine, spread on Leather, and cut in the shape which best suits the Part, usually in slips, placed at a small distance from each other, as in *Tab. VIII. Fig. 1.* or, according to *Petit*, with small holes in the middle of them, that the wounded Lips may be seen, and treated with proper Remedies. Before the Application of either of these Sutures, (as represented in *Tab. VIII. Fig. 1. a, b, c.*) we are to observe, 1. that the Hair be shaved off; 2. that the Emplaster be of a due Consistence; the older and thinner spread, the better it holds, and especially when spread upon coarse Linen; 3. to make them of a due length, to extend a considerable way upon the sound Skin, in order to

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hold the more firmly; and to place them so, as to give a free discharge to the Matter.

Q. 96. How many Kinds of the true Suture do you make?

A. Sutures are from their use distinguish'd into Incarnative, Retentive, and Restrictive. These are again distinguished into Simple and Compound; under the first come the interrupted, the glover's, and the twisted Suture. The *interrupted Suture* is made by passing a strait or crooked Needle, armed with a waxed thread, through the wounded Lips approximated together, observing to enter the Needle at a sufficient breadth from the Wound, that the stitches may hold fast. This being repeated at proper distances, the Needle is taken out, and the threads tied together, beginning first with the middlemost, and so proceeding to each end. The threads are first tied in a simple knot, and after drawing them together, they are tied again over a Compress with a slip-knot. The stitches may be an inch more or less distant, according to the nature of the Wound; see *Fig. 4. Tab. VIII.* The *quilled Suture* is made by sewing Quills or pieces of Emplaster rolled up to the margin of the Wound, as represented in *Fig. 5. Tab. VIII.* the loop of the thread being placed round one Quill, the Needle and thread is then conveyed through the Lips of the

the Wound, and tied upon the other Quill *a*, at *c*. This was much in use with the Ancients, but is at present rejected. The *twisted Suture* is seldom used, but in the Hare-Lip; and it is made by thrusting one or more Needles through the Lips of the Wound, twisting the thread round each Extremity, as represented in *Fig. 8* and *9. Tab. VIII.* The *glover's Suture*, *Fig. 7.* which is commonly used for Wounds of the Intestines, is made with a fine Needle threaded with silk, the stitches being made at about a tenth of an inch distance from each other, by carrying the thread round in the same manner as a Glove is usually sewed, and as represented at *Fig. 7. Tab. VIII.* But in general it is to be observed, that Sutures should never be used where Compress and Bandage will suffice, as in most Cases they generally will, except in angular Wounds, and then the interrupted Suture recommends itself, as being made by the fewest stitches. To these may be added the Suture of a Tendon; but it is found by Experience of late, that if the Limb is retained in such a Posture, as to keep the Extremities of the divided Tendon together, they will unite as well or better without than with a Suture, and therefore Compress and Bandage are in this Case also preferable.

Q. 97. What do you understand by a *complicated Wound*?

A. One that is either venomous, contused, or attended with some violent Symptom, or Injury of a large Blood-vessel, Nerve, Tendon, Bone, &c.

Q. 98. Which do you make the least *complicated Wound*?

A. One that is attended only with a loss of Substance in a soft, superficial or muscular Part.

Q. 99. How do you treat such a Wound?

A. In this Case it would be in vain to attempt to unite the Lips either by Suture or Deligation, till the loss of Substance is supplied; and therefore I am to wait and keep it under the Treatment of a simple Wound, till Nature has supplied the lost Substance, keeping the Patient in a proper Regimen, and the Surface of the Wound defended from the Air with some soft vulnerary Balsam applied upon soft Lint, very loosely retained, that the Extremities of the Vessels and Fibres may be kept in a soft and yielding State; and being careful not to obstruct the repullulating Granulations of Flesh by too strict a Bandage, nor to irritate them by abrading the gelatinous Mucus, which naturally restores, and adds to the growing Parts; and therefore it is

is better to take off the Matter, by absorbing it with scraped Lint, than by wiping the Surface. But if any Part of the Wound appears fungous or discoloured, that must be deterged with the Application of some Medicine agreeable in Strength to the Quantity and Hardness of the Fungus or discoloured Part; such as *vitriolum Rom. vel merc. præcip. rub.* In the mean time the Patient must keep to a nutritive and eupeptic Diet, avoiding all fermenting Liquors, except in case of Weakness; Rest and Sleep are to be indulged, and the latter is to be procured by Anodynes, if wanted; and I observe to keep the Bowels open with Laxatives, if they are not so naturally.

Q. 100. What are the usual *Symptoms* which attend a large complicated Wound, and how do you treat them?

A. These are principally Hæmorrhage, Pain, Convulsions, and Fever. The first, if moderate, and in a young full Habit, may be allowed, to prevent Inflammation, and worse Consequences; but if profuse, or from a Wound in some large Artery, if it be accessible, the Hæmorrhage is to be suppressed, by making a Ligature on the Artery with a crooked Needle and waxed thread, which is the surest and best way; but for the pre-

sent it may be suppressed by the Tourniquet, till the Ligature can be made.

Q. 101. What Method do you take when the wounded Artery is not accessible?

A. If the Artery can neither be compressed nor contracted, by the Application of Styptics, as happens in Wounds of the internal Arteries; in that Case the Patient seldom bleeds longer than to faint away, and then Ligatures may be applied to the Limbs, to retard the Motion of the Blood; the Patient is to be conveyed to some cool and still place, and in that manner to be kept two or three days, carefully avoiding all cordial and stimulating Medicines, and supplying him only with Whey, very thin Broths, &c. for fear of renewing the Hæmorrhage. But in superficial Hæmorrhages, or those which happen in some Cavity, as the Socket of a Tooth drawn, or when a Bone is near, &c. the Space may be filled with dry Lint, or Lint dipped in *alcohol vin.* made hot, or in Water, in which has been dissolved *Vitriolum Rom.* drying it afterwards; But Styptics and Cauteries should never be used to suppress an Hæmorrhage, when Ligature or Compressure can take place.

Q. 102.

Q. 102. Which of these Ways do you prefer for suppressing an Haemorrhage?

A. That by suitable Bandage and Compresses or Bolsters appears to be the best and most natural Method, when the Artery runs along the side of a Bone. Nor is it necessary to compress the Artery so far, as totally to occlude its Passage to the Blood, but only to impede its Efflux, and retain the Thrombus, so as to grow to the sides of the divided arterial Coats. But this requires great Judgment, not to let the Compressure be too small, to prevent an Aneurism. But if the wounded Artery lies within a Bone, which prevents its lateral Compressure, in that Case the only Means remaining is to apply dry Lint, and retain it forcibly against the divided Orifice.

Q. 103. How do you remove the Pain and symptomatic Fever in Wounds?

A. Pain seldom happens to so great a degree from the natural Contraction of the divided Parts, as to require a separate Treatment, unless the Part be nervous or tendinous, contused, inflamed or irritated by some foreign Body; and therefore the first Enquiry must be, from which of these immediate Causes the Pain and Fever proceed: the foreign Bodies are to be removed, the Inflammation

mation is to be allayed by bleeding, with cooling, internal and topical Remedies, emollient Cataplasms, &c. But if the Part be either Nerve or Tendon, nervous or tendinous, the Case is often dangerous, and *Convulsions* or Death the Consequence, unless the Nerve be totally divided, or the Tendon kept relaxed; which must be therefore put in practice to save the Patient, if other Methods will not suffice. But first it may be proper to try warm mild Digestives and emollient Cataplasms, and endeavour by suitable Dressings to take off the Distension as much as possible from that Part; which Distension being removed, the Fever, Convulsions and other Symptoms consequently vanish.

Q. 104. But what Method do you take, when *Convulsions* follow from too great a loss of Blood, instead of any of the fore-mentioned Causes? (Q. 103.)

A. In that Case, as the Heart is not duly supplied with Blood, and the Arteries do not force it sufficiently into the Brain and Cerebellum; strait Stockings and restrictive Bandages are therefore to be applied to the Limbs, and the Abdomen is to be swathed, while in the mean time the Patient is supplied with Broths, Whey, &c. after being revived by the Application of Volatiles to the
Nose,

Nose, or Cordials internally, if there is no danger of their renewing the Hemorrhage.

Q. 105. What are the Consequences of a large Artery or Nerve being divided?

A. If the first does not induce a fatal Hemorrhage, the Parts below the Wound being no longer supplied with Blood, unless they are furnished by other Arteries, must consequently either mortify, or wither and dry up; and if partially divided, it causes an incessant Hemorrhage, or an Aneurism. But if a large Nerve be totally divided, it at first brings on excruciating Pain and Inflammation, by its contracting and stretching the other Branches communicating therewith; and afterwards the Part becomes paralytic, and either withers, or else is consumed by a Mortification; for the Arteries being no longer able to propel, or circulate their contained Humours for want of the Nerves which supply their Coats, the Humours are accumulated, stagnate, corrupt, and mortify the Part.—But if the Nerve, or even a Tendon be only half divided, there follows a continual and slow Laceration, a spreading Inflammation, excruciating Pain, Fever, Delirium, Convulsions, &c. with a Gleet, or thick serous Discharge; which Symptoms are in proportion more violent, as the Nerve is more distended or stretched; and therefore
here,

here, as in the Artery, a total division of the Nerve or Tendon, or an Amputation, must often be made to save the Patient; though we may first try the Application of a little Balsamum Peruvianum dropped warm into the wounded Tendon, with suitable Bandage to take off the Distension. This holds true likewise in membranous or nervous and tendinous Parts, as well as in the Nerves and Tendons themselves.

Q. 106. What is the Nature of contused and Gun-shot Wounds?

A. These are always much more difficult to cure than an incised Wound even with loss of Substance, because here the Fibres and Vessels being lacerated, their Juices extravasated, and their Fabric destroyed, makes a large Digestion or Suppuration previously necessary, to remove the morbid Parts, before the Wound can be incarnated and healed; and hence also the Symptoms of Inflammation, Pain, &c. are commonly more violent in contused Wounds. They are more or less dangerous according to their Extent, and the Part in which they are seated. Those which extend into the Bones, Viscera or Joints, are of the worst kind; and especially when any of the Wadding, Cloths or Splinters are carried into the Part together with the Ball; for the Consequences in these Cases must be
Inflam-

Inflammations, Gangrene, Caries, &c. which make an Amputation necessary. But Gun-shot Wounds in the Cranium are above all the most malignant and fatal; though we have often surprising Instances of Cures made by Art and the Efforts of Nature, even here when the Case has seemed desperate.

Q. 107. How do you treat Gun-shot Wounds?

The following Answer is extracted from Mr *Ranby's* Treatise on Gunshot Wounds, whose superior Judgment and Experience in these Matters must be allowed unexceptionable.

A. "The first Intention, in regard of Accidents caused by a Musket or Pistol-Ball, is, if possible, to extract the Ball, or any other extraneous Body that may be lodged in the wounded Part. And whenever these Casualties are attended with a great Effusion of Blood, from the Rupture of some considerable arterial Vessel, it will be absolutely necessary, with all imaginable dispatch, to restrain the bleeding, by taking up the Artery with the Needle: and, at the same time, to be particularly careful that your Hold prove no ways elusive. There is no depending on any
Appli-

Applications, however styptic, on these occasions.—In order to get at the Ball, or any other foreign matter that infests the Wound, I would advise probing or poking to be used as sparingly as possible; having constantly experienced, through the whole Course of my Attendance in these Cases, that such a Conduct is highly detrimental to the Patient. And, indeed, where probing is necessary, I would always prefer the Finger as the best and truest Probe. — If a Ball or any other Body happens to be lodged near the Orifice, or is perceptible by the Finger to lie under the Skin, though at some distance from the Mouth of the Wound; in the first Case it is requisite immediately to remove such extraneous Matter: and, on the other occasion, to cut upon it, and take it out. But when it is sunk deep, and lies absolutely beyond the reach of the Finger, I could never bring myself to thrust those long Forceps the Lord knows where, with scarce any probability of success.—A great number of Instances have occurred to me, where Balls have been quietly lodged in the Body; till, after many years, they have worked themselves a passage towards the surface, and were consequently very easily extracted.—In case the Wound be occasioned by a Musket or Pistol-shot, and consequently but small, it will be alto-

altogether necessary to dilate it without delay. Yet, I think, in Wounds near a Joint, or in very membranous or tendinous Parts, the Knife as well as Forceps should be put under some restraint; nor any more opening made, than what is absolutely requisite for the free discharge of the Matter lodged within. Wounds in the Joints are always dangerous, let them proceed from whatever Cause, whether from a Bullet, or any cutting Instrument: and membranous or tendinous Parts must, past dispute, suffer from their being thus exposed to the very sensible Impressions of the Air.—I could produce many Instances of Balls going through muscular Textures, and the Wounds being healed with very little trouble. And I have known Wounds of the Skull from a broad Sword, (where both Tables have been cut through, and a considerable Piece loosened) having been suffered to bleed for several hours, to do well; nor to be attended, or at least very seldom, with any feverish Complaint. Which I am apt to attribute to the great quantity of Blood lost immediately after the Parts had been injured.—If the Ball has gone quite through, both Orifices are to be widened, (if in a Part where it can be done with safety) and particular Care is to be taken to preserve both Openings; that especially which is the most depending. No Tents are to be made use
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of, where there is any possibility of avoiding them : and I would in general recommend light, easy Dressings, with a slight, moderate Bandage, just sufficient to keep them on the Part. Thin Flannel is what I would prefer, in case it can be got.—Where the wounded Person has not suffered any great loss of Blood, it will be advisable to open a Vein immediately, and take from the Arm a good large quantity, and to repeat bleeding, as Circumstances may require, the second, and even the third day. This timely Precaution will prevent a good deal of Pain and Inflammation, forward the Digestion, and contribute towards obviating a long Train of complicated Symptoms, that are wont otherwise to interrupt the Cure, miserably harraßs the poor Patient, and too often endanger his Life.—For the first twelve days it will be proper to observe a cooling Regimen, both in respect of the Meedicines that may be prescribed, and the Diet requisite for the support of Nature : and as, in Circumstances of this kind, 'tis necessary the Body should by all means be open ; a Stool should be every day procured, either by emollient Clysters, or some gentle Laxative taken in at the Mouth.—Whatever Application is of a hot, spirituous nature, I find remarkably injurious on these occasions, and what no wounded Part can in any degree bear. Let the first Dressing

ling be with Lint, dry, or moistened with a little Oil, and a very light Bandage; the next with a Digestive warmed, and over it the Bread and Milk Pultice, mixed with a sufficient quantity of Oil to keep it moist; and, where there is a great Tension, and the Wound large, a Fomentation. And this Course is to be continued, till the Sore is clean; and then it is to be healed according to Art. This Method will commonly promote a constant, easy Perspiration, abate the Pain, very much facilitate the Digestion, and remove all Apprehensions of any approaching Inflammation. What induces me to moisten the Lint with Oil, is the Ease that is procured to a contused Wound from such an Application, in comparison of one of an absorbent, drying disposition; which, instead of giving free liberty to the sanious Blood to discharge itself, and consequently preventing an Inflammation by unloading the Part, would possibly obstruct the Mouths of the capillary Vessels, and hinder Nature from getting rid of that Incumbrance, which 'tis observable she very much affects to throw off.—Should an Inflammation seize any Part, through the Lodgment of a Bullet, or any other foreign Body, that could with safety have been more immediately extracted; all Attempts for dislodging such extraneous Matter should be postponed, till the swelling has in some measure

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ture subsided, and the inflammatory Disposition of the Fibres is nearly vanished: unless the Ball, or other extraneous Body, lies at no great distance from the Orifice; and there is, on that account, a Certainty of removing this Incumbrance without any material trouble to the Patient.—If a Wound be of such a desperate nature, as to require Amputation, (which is often the Case, when it happens in any principal Joint) it would certainly be of consequence, could the Operation be performed on the Spot, even in the Field of Battle: lest by adjourning it an Inflammation, which one may very reasonably expect, should obstruct a Work, that ought rarely to be entered upon during the Continuance of so calamitous a Circumstance. The neglecting this critical Juncture of taking off a Limb frequently reduces the Patient to so low a State, and subjects the Blood and Juices to such an alteration, as must unavoidably render the subsequent Operation, if not entirely unsuccessful, at least exceedingly dubious. And in Wounds, even where no Amputation is required, 'tis equally advisable not to defer the Care necessary to be taken of them; lest, by the Parts being exposed to the Air, there might arise a Series of very dangerous Symptoms. — Wounds, that border on any considerable Artery, are very apt to bleed afresh upon Motion, or the Return of a free

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Circulation of the Blood into the Part, which was interrupted at first by the Violence of the Injury offered it : and this is almost always the Case, when the Slough begins to separate. For which reason, one should never attempt to remove it by force; but wait with patience, till there be a perfect Separation of this Slough : nor be in the least-wise shocked at the Accident of Arteries thus opening themselves, which a very moderate Experience will convince one to be almost inevitable. The Patient frequently gives warning of what is coming upon him, by complaining of great Weight and Fulness in the Limbs, which are ever accompanied with more or less Pulsation in it : an infallible Prognostic of the Consequences. Let the Wound afflict whatsoever Part, if these Complaints attend it, I instantly enjoin bleeding and the Bark. I have known several Instances of Persons losing their Lives from the starting of an Artery, before the Surgeon could reach them ; particularly where there has preceded an Amputation. And I dare affirm, the quantity of Blood lost in some Cases which I have observed to kill, has not amounted to twelve ounces : which I don't know how to account for otherwise, than by the Drain which had been made from the Mass of Blood both before and during the Operation. Whence a sudden Gush, though of so moderate a

portion of Blood, after the great quantity already lost, gives a check to the Circulation, and causes immediate Death. This Reflection, I think, ought to be a Lesson of Instruction to every Practitioner, to be particularly intent on the faithful Discharge of his Duty in regard of tying the Vessels. — Repeated Bleedings in the beginning draw after them many Advantages. They generally prevent, and always lessen, any feverish Assaults, and seldom fail to obviate Impostumations. The Body must ever be kept in a laxative State; and, when Pain puts it on the rack, immediate recourse must be had to the sovereign and almost divine Powers of Opium. — Next to this I likewise add the *Bark*, a Medicine which no human Eloquence can deck with Panegyric proportionable to its Virtues. Of such incomparable Benefit it is to Mankind! — I have known it procure Rest, if given in large Doses, when even Opium had been taken without any manner of effect. In all large Wounds, especially those made by a Cannon-ball, there is constantly a great Laceration of the Membranes, and Parts endued with an exquisite Sensation. And these are ever attended with an excruciating Pain, and a Discharge of a gleety Matter; which, if not restrained, proves often of the last Consequence. In this unhappy State, the *Bark* given in doses
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of a dram each, and repeated every three hours, (or oftener, if the Stomach will bear it) with surprising Efficacy repairs the Breach made in the Constitution by this terrible havoc. Elixir of Vitriol, taken three times a day, in a glass of water, I find to be of singular Benefit, and to prove a very good Assistant to the Virtues of the Bark. And, if the Body be costive, to each dose of the Bark I add four or five grains of Rhubarb, till that Inconveniency is remedied. Should the Bark run off by more than four or five successive Stools, I take care to check this Effect of it by ordering two or three drops of Laudanum, or two Spoonfuls of the Dia-cordium mixture along with it, every time it is given.—Where the Sore discharges a considerable quantity of gleety Matter, is flabby, looks pale and glossy, (which Appearances are ever consequent to a loss of Substance) the Bark continually relieves the Pain that is predominant in this Case, thickens the Matter, lessens its quantity, and quite changes the Complexion of the Wound.—It is very common in cachectic and scorbutic Constitutions, for a Sore, the first eight or ten days after taking off the Limb, to promise all imaginable Success: from which time it frequently begins to gleet prodigiously, looks pale, glossy, and flabby; and, this gleeing if not checked, in a little while runs the Pa-

tient out of the World. In Exigencies of this kind the Bark hardly ever fails to procure Relief, and works an apparent Change in a very short space of time: sometimes in twelve hours."

From what has been here said by Mr *Ranby*, it is evident that the Bark is one of the best Remedies in contracting the Vessels, and restoring their due Action upon the Blood, when too great a quantity of that necessary Fluid has been lost by a profuse Hæmorrhage, provided the wounded Vessels are previously closed up, or well secured from a Return of the Hæmorrhage. It also not only secures the most tender Solids and small Vessels from being dissolved by the Acrimony of any Matter absorbed, and returned into the whole Mass of Blood from large Wounds or latent Abscesses; but it likewise preserves the Texture of the Blood itself from being too much broken, or rendered too watery from the same Cause, which would otherwise inevitably produce a fatal and colliquative Hætic. But where there is too great a Fulness, or too great a Strength and contractile Force of the Solids, and an inflammatory Tenacity or Siziness in the Blood, it may occasion Obstructions, Pains, Inflammations, and their Consequences, unless it be timely laid aside upon the appearance of such Effects.

Q. 108. What is the Nature of a *Gangrene*?

A. This is an incipient Mortification in a fleshy Part, proceeding from the Circulation suppressed either by external or internal Causes; such as extreme Cold, Weakness of the Circulation, a Want of nervous Fluid, the Division of a Nerve or Artery, a violent Inflammation, which can neither be dispersed, nor brought to Suppuration, &c. and therefore a strict Regard must be had to which of these Causes are productive of the *Gangrene*, which usually begins in the Panniculus adiposus, or Integuments; and spreading by degrees forms a perfect *Sphacelus*, when it is extended to the Bone.

Q. 109. What are the Signs of a present *Gangrene*?

A. These are taken (1.) from considering the preceding Causes (Q. 108.); (2.) from the Inflammation and Pain suddenly disappearing, and being followed with a dull Sensibility in the Part, while the Integuments turn pale, blue, livid, or inclined to black; (3.) from a Softness or Flaccidity and Pitting of the Skin, which has Vescications filled with a yellowish or reddish serous Ichor.

Q. 110. How do you treat a *Gangrene*?

A. In order to prevent it from turning to
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a Sphacelus or compleat Mortification, a regard must be had to the immediate Cause in the Patient's Habit (Q. 108.); the Circulation is to be kept up by Cordials and proper Diet; the Parts are to be deeply scarified, fomented warm, and the Cataplasm of Oatmeal boiled in stale Beer, applied, with Cordial Medicines given internally; but the *Cort. Peruv.* given as in the Q. of Gunshot Wounds, is the Medicine principally to be relied on, and is almost universally acknowledged to be a most sovereign Remedy in these Cases,

Q. 111. What is a *Sphacelus*?

A. This is a compleat Mortification extended even to the Bone, (so that a Knife may be run through the Part without causing Pain) spreading by degrees further into the living Parts, and yielding an intolerable cadaverous Smell.

Q. 112. How do you treat a *Sphacelus*?

A. In the same manner as a Gangrene, and when the Separation of the mortified Parts from the living is advanced, if it is a Part that can be amputated, that Operation must be performed; for the Manner of performing which, see the Operations. If it is in a Part that cannot be amputated, the Removal of the sphacelated Parts must be directed by the Judgment of the Surgeon, according

according to the Situation and Circumstances of the Mortification, and the Administration of the Bark, &c. persisted in at least till a compleat Digestion is procured.

Q. 113. How do you treat venomous Wounds?

A. Almost the only and most dreadful venomous Wound which we have to guard against in our Climate, is that from the Bite of mad Animals, whether Dog, Cat, Wolf, Ape, Man or Horse, &c. and in this Case, as in all other venomous Wounds, if made in the Extremities, a strict Ligature ought to be immediately applied, and the Part afterwards well scarified or cupped all over, especially on and near the Wound, before the Ligature is taken off; or the Application of a hot Iron to the wounded Part immediately, if the Patient can have Resolution to bear it, to burn the Part where the Saliva is lodged till it is quite dead, may be a Means of stopping the Progress of this dangerous Poison. But as this seldom happens to be ready, the Application of Salt repeatedly to the Part has been recommended as a most efficacious Remedy, after which a Course of cold bathing, and Dr Mead's or Sir George Cobb's Medicine, as mentioned in the *Index Remediorum*, may be pursued, with Bleedings, as Occasion may require. But this Accident is so dreadful

ful and so generally fatal, that all the Powers of Art are for the most part unsuccessful, and therefore a Physician should be timely called in, whose Province it is to direct the proper internal Remedies.

Q. 114. How do you distinguish Wounds of the Head?

A. According to the degree of their Penetration, into such, as only injure the common Integuments; such as injure the Skull and Dura Mater, and those which affect the Brain itself: and as their degree of danger depends generally upon that of their Penetration, therefore a strict Enquiry ought always to be first made, how far a Wound in the Head penetrates or extends.

Q. 115. How do you distinguish whether the external Parts only are injured?

A. From considering the Nature and Violence of the wounding Instrument, by inspecting and searching with a Probe, and by finding the Patient free from any violent Symptom; that is, without a Vertigo, Deafness, loss of Speech, bleeding at the Ears, Mouth, &c.

Q. 116. How do you treat Wounds not penetrating the Cranium?

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A. These may be considered as happening by Puncture, Incision, or Contusion; the two first happening from sharp pointed or edged Instruments, if unattended with Symptoms of Extravasation, or Commotion of the Brain, may be treated as a simple recent Wound in any other Part; the Bleeding is to be restrained by dry Lint, or Ligature, as may be required, and the Dressing over it, a Pledget of Digestive, retained by Plaster or Bandage. If a Portion of the Scalp is only raised by the Wound, it may be replaced, and the Lips kept together either by Suture or Bandage, in order that the Cure may be accomplished by Agglutination. Contused Wounds occasioned by Falls or obtuse Instruments, amongst which those happening by Gunshot may be considered, are often attended with very bad Symptoms, although there is neither Fissure, Fracture, nor Depression of the Cranium: If the Violence of the Blow has been sufficient to cause an Extravasation of Blood, the Symptoms of Pressure on the Brain come on, as Vomiting, Drowsiness, Stupor, and a Loss of voluntary Motion; sometimes the Blood gushes out at the Nose and Ears. These Symptoms appear immediately, or come on very soon after the Blow. If the Blow has been slighter, but smart, the Pericranium may be injured, and though not discoverable on the first inspecting

specting of the Wound, such Symptoms may afterwards arise as are of the most dangerous Consequence, and will be hereafter described. Independent of these accidental Symptoms, all extraneous Bodies, extravasated Blood, lacerated or violently contused Parts being removed, the Wound is to be dress'd with warm Digestives, and, if necessary, a discutient Cataplasm may be applied over all. The Patient should be bled, a strict Regimen enjoined, and the Body kept in a laxative State till the Digestion is compleated, and the Inflammation and Swelling of the Scalp entirely gone off.

Q. 117. How do you proceed in Case of a considerable Contusion in the Scalp?

A. In a slight Contusion, without a Wound, or any Symptoms of Fracture, Depression, or Extravasation; a Cataplasm of Oatmeal, mixed up with two Parts of Vinegar and one of Oil, apply'd to the Contusion, will be sufficient; or a Compress wrung out in Vinegar alone, and kept moist on the Part, will disperse a slight Ecchymosis. But if there is a considerable Collection of extravasated Blood, or a Puffiness of the Scalp to be felt, it must be taken off according to the Extent of the Contusion, and then a Discovery of the State of the Parts underneath will point out what is further necessary to be done;

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If they are unhurt, and no bad Symptoms arise, the Treatment may be as in contused Wounds, Q. 116.

Q. 118. What are the Consequences of a Wound injuring the Pericranium, and exposing the Skull?

A. Since this Membrane is the Periosteum supplying the nutritious Vessels into the Bone of the Skull, if that be separated, and the Bone exposed to the Air, the Circulation will be destroyed through the exterior Lamellæ, whence the Humours will stagnate, corrupt, and foul the Bone, which will therefore exfoliate or throw off the dead and discoloured Scale or Lamella, which is more corrupted, in proportion as it appears of a darker Colour; and as this Foulness is the Effect chiefly of the Air drying up and destroying the Vessels which run betwixt the Fibres of the Bone, so it will be necessary to procure or hasten an Exfoliation of that Lamella, which is now become dead, and, as a foreign Body retards the Cure, and spreads the Disorder, as long as it continues adhering to the living Parts. But the exposing the Skull by the Pericranium's being forcibly separated from it, and its growing carious in consequence is of slight consideration in competition with the Injury sometimes done to the Pericranium by a smart Blow, which so damages

inflammes the smaller Vessels that carry on the Circulation between it, the Skull and Dura Mater, that they inflame and becoming sloughy, a spontaneous (as it were) separation of the Pericranium from the outer Part of the Cranium ensues, and of the Dura Mater from the inner, which soon also becomes sloughy. The Symptoms attending this Disease are, Pain in the Head, especially where the Blow was received, Restlessness, a quick and hard Pulse, hot and dry Skin, flushed Cheek and inflamed Eye, Nausea, Vomiting, Rigor, and toward the Close, Convulsion and Delirium. None of these however appear at first, seldom until some Days are past, and if there is neither Fracture, Commotion nor Extravasation, and the Scalp is not much bruised nor wounded, the Injury is not discovered nor attended to for some Days. In this case, if the Inflammation is not prevented, or early taken off by plentiful and repeated Bleedings and other Evacuations, in a few Days a puffy Tumor of the Scalp appears. These are the Symptoms to direct us when the Scalp is whole, and if divided then, the Pericranium is found detached from the Skull nearly the Extent of the Swelling, and of a darkish Hue, with a small Quantity of Ichor under it, and the Bone is beginning to change its Colour. If the Removal of the Scalp is longer deferred,

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the Sanies will be more considerable, the Colour of the Pericranium more livid, and the Skull of the Colour of a dead Bone. The Dura Mater, if uncovered, will be found separated from the inner Surface of the Cranium, its natural bright tendinous Appearance alter'd to a dull sloughy cast, smeared over with something glutinous, but as yet no Matter on its Surface. In the last Stage, a very offensive Matter is found between the Scalp and the Cranium, the Bone is much discoloured; on perforating it where the Tables are most distant from each other, a discoloured Sanies issues from the Diploe instead of Blood, and the Space where the Dura Mater is detached from the Skull is filled with Matter, which sometimes insinuates itself over the whole Surface of that Membrane, and is also found between it and the Pia Mater. But if there is a Wound at the Time of the Stroke, or the Scalp is divided or taken off in consequence of the Symptoms that arise, the Wound will (if the Pericranium is injured as before mentioned) soon lose its favourable Appearance, become pale, shabby, glossy and painful, discharge a thin Gleet, the Lint will stick closely to it, and the Pericranium separate from the Bone to some Distance from the Edges of the Wound, notwithstanding which the rest of the Scalp will remain free from either Inflammation or

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Tumor. Such are the Consequences of the small Vessels being contused, which carry on the Circulation and Communication between the Pericranium, Cranium, and Dura Mater; and if not remedied by timely Attention and Care, they generally prove fatal. In order therefore to obviate such a melancholy Event, we must first endeavour to prevent the Inflammation and Separation of the Dura Mater; and for this Purpose nothing is so effectual as very early, plentiful and repeated Bleedings, which are not to be spared, although the Patient and his Friends should object to them; to which must be joined a strict cooling and spare Regimen, with Purges of the lenient kind. If these fail, and the Pericranium is detached from the Cranium, and altered in its Colour, attended with Fever, and the other Symptoms before mentioned, the Trephine is to be apply'd without Delay, and as many Perforations made as the State of the Dura Mater, when uncover'd, will seem to require. These must be according to the Quantity of the Matter, and the Extent of the Separation of that Membrane from the Skull, and in such part as is best situated for the Discharge of Matter; which if collected also between the Dura and Pia Mater, the former must be divided at all Events for its Discharge. This, though too often unsuccessful, is the only proper

proper and rational Method that can be pursued in these dangerous Cases.

Q. 119. What Injuries may the Skull itself sustain from a wounding Instrument?

A. It may either receive a Fissure, Fracture, Contusion, Depression, or a loss of Substance; and this either in one or both of its Tables at the same time.

Q. 120. How do you discover that the Skull is thus injured by a Fissure, Fracture, &c.?

A. If there is only a Contusion, I endeavour to discover by the Fingers whether there is any Depression or Inequality in the Surface of the Bone, though that sometimes may deceive; If there is a Wound there will be more Certainty, and if the Cranium is laid bare, the Sight and Touch then will give a decisive Determination of its State. Other Signs or Tryals, such as the Patient (tho' insensible) pointing often to the Place, or complaining of Pain in a particular Place if sensible, the biting of a hard Body, vibrating a String between the Teeth are not to be depended on. The Symptoms of Vomiting, Stupor, Coma, &c. are equivocal, and as often happen from Extravasation, Concussion, or Commotion of the Brain, without any Fracture or Fissure, as with.

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And the febrile Symptoms, as quick hard Pulse, hot Skin, flushed Check, inflamed Eye, with Pain, Restlessness, Rigor, Delirium, &c. we have explained before to happen by the Pericranium and Dura Mater's being injured, tho' there was no perceptible external Violence to be perceived at first, nor any Fissure or Fracture afterwards found on denuding the Skull.

Q. 121. When is it necessary to expose the Skull?

A. Where the Contusion is very great, and a considerable Extravasation under the Scalp is to be perceived, especially if attended either with Symptoms that indicate Pressure on the Brain, or Inflammation of the Dura Mater, which do not give way to Bleeding and other proper Remedies, or where a Depression or Fracture of the Skull is discovered by the Touch. But where there is no Mark that points out the Place of the Injury, the Scalp ought not to be taken off, according to the Observation of the best Surgeons, who are of Opinion it should not be removed to search for Fissure, or Contra-fissure, upon an Uncertainty.

Q. 122. How do you raise the Scalp in these Cases?

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A. By making a circular Incision of a Size proportioned to the apparent Injury, and enlarging it if it is not extensive enough to take in the Fracture, Fissure or Depression; separating the Pericranium from the Bone, and stopping the Bleeding either with dry Lint or a Ligature on any Vessel that may require it.

Q. 123. How do you proceed when a Contusion or Fissure appears?

A. If the Bone is only discoloured so as to indicate its approaching Caries, and there are no ill Symptoms attending it, or they quickly disappear, by the Use of proper Remedies, I then only endeavour to procure a speedy Exfoliation, as in other carious Bones. But if there is a Fissure, I proceed to the Use of the Trephine, which is the safest Method that can be taken according to the Opinion of the best Authors.

Q. 124. What do you understand by a Depression of the Skull?

A. An Inequality of the Level of the Surface, which in Adults cannot happen without a Fracture, but may in Children while the Cranium is soft and has not acquired its perfect Solidity. In such case the Symptoms before described of Pressure will come on immediately, as Vomiting, Stupor, &c. &c.

And if the Depression is not elevated to its proper Level, they will soon be succeeded by those of the inflammatory Kind, and Death will quickly ensue: Therefore in all Depressions the Bone must be brought to its natural Situation, or removed as soon as possible.

Q. 125. How do you raise a Depression of the Skull?

A. Many Methods and Instruments have been contrived, but the modern Practice is, after removing the Integuments to apply the Trephine near the Depression on a firm Part of the Cranium, and afterwards to introduce the Elevator through the Perforation under the depressed Bone, and elevate it to its proper Level, or if fractured all round, it is best at once to take it quite out.

Q. 126. In what Cases and to what Parts of the Skull do you apply the Trephine?

A. 1. In all Fissures, Fractures, and Depressions of the Skull, accompanied with Symptoms of Pressure on the Brain. 2. When those Symptoms are urgent, though there is neither Fissure, Fracture, nor Depression, if there is any considerable Contusion that points out the Place where one may imagine the extravasated Fluid to lie, and occasion those Symptoms, if they are not soon removed

moved by the liberal use of the Lancet, and other proper Remedies. 3. When on account of the inflammatory Symptoms formerly described, the Cranium is laid bare, and I find the Pericranium detached from the Skull, so as to make me conclude the Dura Mater to be either in an inflammatory or sloughy State, as nothing can possibly save the Patient but this Endeavour to relieve the Dura Mater, Pia Mater, or Brain in these Cases, when either loaded with extravasated Blood, Lymph, or Matter. As to the Parts, where the Trephine may be applied, that must be determined by the Place of the Injury, and though we are taught to avoid perforating the Skull on the Sutures, the occipital and temporal Bones, and the frontal Sinusses, yet in Cases of Necessity it is better to try a doubtful Remedy than none; and notwithstanding this Prohibition we have had several Instances, where the Trephine has been applied on the Sutures, the temporal and occipital Bones, not only without any ill Consequences, but even attended with the most happy. Nevertheless, if the Application of the Trephine near these prohibited Places, and not on them, will answer the Purpose, it will certainly be most prudent to pursue that Method. The Manner of performing the Operation you will have described in its Place. I shall conclude with

recommending to the young Student in Surgery an attentive Perusal of Mr Pott's Observations on the Nature and Consequences of Wounds and Contusions of the Head, from which great Part of the foregoing Description of their Nature and Treatment is extracted; where he will find the Subject amply treated of in a judicious and satisfactory Manner.

Q. 127. How do you distinguish and treat Wounds of the Neck?

A. These according to the Nature of the Parts wounded are more or less dangerous, Such as penetrate into the carotid Artery, or internal jugular Vein, soon kill the Patient by a fatal Hæmorrhage, unless a Surgeon is at hand to open the Integuments, and tie up the Vessel; and in that case the Patient may be saved, though the Course of the Blood on that side the Head be intercepted, as we learn by Experiments on a Dog. If the Windpipe only is wounded with the external Jugulars, the Case is not so dangerous as might be imagined, provided it is not quite cut in two, so as to let the lower Part contract into the Thorax. Here the divided Parts are to be brought together by the interrupted Suture with a Needle and Thread, or by introducing two Needles, one in the upper, and the other in the lower part of the Trachea,

Trachea, (so however as to avoid injuring the internal and very sensible Membrane) afterwards binding them together with a Thread after the Manner of the Hare-Lip, *Tab. VII. fig. 9.* and when the Trachea is united, the Wound then may be healed after the common Method. — Such Wounds of the Neck as penetrate the Gula, are very dangerous, and rarely cured, because of its Action in Deglutition, in which the Aliments escape and corrupt about the wounded Part; and are commonly attended with a troublesome Hiccup or Vomiting. Such Wounds of the Neck as divide the *Par vagum* and other large Nerves, which supply the Viscera of the Thorax and Abdomen, are always fatal in time (though not immediately) by inducing a Palsy of those Organs.

Q. 128. How do you discover a Wound penetrating the Cavity of the Thorax?

A. By the Probe; by holding a Wax-Candle against the Wound, and observing if any Air enters or returns, while the Patient lies in the Posture wherein he received the Wound; by injecting some Liquor which is refused a Passage, and from the Signs of the Lungs adhering to the Pleura of the Part wounded: but even the Matter formed in a Wound which does not penetrate, may by degrees make its way through the Pleura, so

as to produce an Empyema with all its Consequences; and therefore Care should be taken to procure a free Exit to the Matter in these Wounds, by making no Pressure or Obstruction at their Orifice.

Q. 129. What Effects follow from a Wound penetrating the Thorax?

A. They are an Obstruction of Breathing, and the Circulation of the Blood through the Lungs; an Extravasation and Spitting of Blood; an Empyema purulent, hectic, &c.

Q. 130. How do you know Blood is extravasated in the Thorax by a Wound penetrating its Cavity?

A. From the Oppression or Difficulty of breathing; from the Patient lying easy only upon his Back, not being able to lie on the sound side, nor without great uneasiness upon the wounded; by the present Effects of a Wound thus penetrating, as last mentioned (Q. 129.); and finally, from the Fluctuation, an Oppression upon the Diaphragm, attended with great Weakness, Paleness, and cold Sweats.

Q. 131. What and how is an Emphysema sometimes produced in these Wounds?

A.

A. This is a flatulent Distension of the cellular Membrane, by the Air forcing its way through the Lips of the Wound into the Cells, after it has been confined and rarified in the Cavity of the Thorax, into which it is often poured thro' the wounded Lungs; for when once the Air has thus made its way into the cellular Membrane, it soon spreads throughout the whole Body, and causes a soft pellucid Tumor immediately under the Skin, except at the Soles of the Feet and Palms of the Hands, causing a Tumor in some places near a foot thick; as in the History mentioned in *Mem. Acad. ann. 1713. p. 15, 18, 119, & seq.* To prevent this therefore, the cellular Membrane must be compressed at the Wound, and the Flatus which has once enter'd it must be discharged, by Compressure, through an Incision of the Integuments.

Q. 132. How do you treat a Wound penetrating the Thorax?

A. The first Intention is to discharge the extravasated Blood as soon as possible, by placing the Patient in a convenient Posture; by diluting it with some deterging Liquor injected, and then extracting both with a Syringe, or by dilating the Wound, or making a new Opening betwixt the second and third of the lower false Ribs, at about a hand's

hand's breadth from the Spine, and as much from the lower Angle of the Scapula, dissecting the Incision in a parallel Course betwixt the Ribs, with the back of the Knife upward, and the edge inclined downward, the point being obtuse, to avoid injuring the Lungs, and to avoid wounding the intercostal Vessels, which run along the lower side of each Rib. While this is performing, at first the Patient should incline backwards, that the Skin and latissimus dorsi Muscle may be more easily taken up and incised; then leaning forward, the Incision may be made through the tense intercostal Muscles and Pleura in the Center betwixt the two Ribs. If the Lungs should adhere to the Pleura in that part, one must be very cautious not to wound them, but to carefully and gently separate them by the finger: but if the whole side of the Lungs should adhere to the Pleura, so that they cannot be separated; this indeed must render the Operation useless, but cannot give occasion of any just Reflection upon the Surgeon.

Q. 133. How do you discharge the Air which has entered into the Cavity of the Thorax?

A. By ordering the Patient to fetch as deep an Inspiration as possible, and then by closing the Lips of the Wound together immediately

diately after the Air is expelled by the Expansion of the Lungs: but it will be in vain to attempt this exact Exclusion of the Air; until the Thorax is perfectly freed from the extravasated Humours; and when once it is performed, great care must be taken to prevent the Air from entering again.

Q. 134. How do you treat these Wounds when they penetrate the Lungs?

A. If any of the large pulmonary Blood-vessels are divided, a fatal Hemorrhage presently ensues; or if their cellular Substance only is wounded, an Hemopthoë ensues more or less, and the Wound heals more slowly than it otherwise might, on account of the incessant Motion of this Organ. In this Case therefore the Patient is to be reduced as low as possible, by bleeding when necessary, using a liquid, spare and cooling Diet, and abstaining from every thing which stimulates or increases the Blood's Motion; and especially if a Cough attends: that must be allayed by lenient Purges, Balsamics, and Opiates when necessary.

Q. 135. How do you discover that a Wound penetrates into the Abdomen?

A. By the same Methods as in a Wound which penetrates the Thorax before-mentioned (Q. 128.) except the Candle tryal.

Q. 136.

Q. 136. What are the Consequences of a Wound here, which penetrates no deeper than the Peritonæum?

A. Unless proper Care be taken, the Intestines, Omentum, and other Viscera being urged downward by the Diaphragm at every Inspiration, will distend the Peritonæum into a Sacculus, and thrust out the Intestines where the Integuments give the least Resistance, so as to form an Hernia; which may be of the most fatal Consequence, when the Wound runs obliquely betwixt the Muscles, or is not timely discovered and relieved.

Q. 137. How do you discover that the abdominal Viscera are wounded?

A. If warm Water injected returns colourless, and if the Patient is not afflicted with any violent Symptoms, I conclude they are safe; but if a violent Fever, Vomiting, Hiccup, &c. appear, while the Injection returns discoloured, there is reason to suspect some of them injured: which of them it is, I conclude from the Make and Extent of the wounding Instrument, the Course of the Wound, and its Situation with respect to the Regions of the Abdomen and their several contained Parts; as also from the Matter which is discharged from the Wound: if the Chyle or Aliments are discharged in their crude

crude State, I conclude that the Stomach or small Intestines are wounded; if the Faeces are discharged, the large Intestines; if a great quantity of serous and bilious Liquor is extravasated, the Direction of the Wound being towards the Liver, while the Intestines lose their peristaltic Motion, and are not obedient either to Purges or Clysters, the Patient being restless and without Fever, I conclude the Gall-bladder or Duodenum to be wounded, which is a Case of the greatest Danger; if the Urine is made bloody, the Kidneys are probably injured; but if the Urine is discharged through the Wound, either the Bladder or Ureters are wounded; if the most acute Pain, Fever and Inflammation attend, and rise upward towards the Throat, without a Discharge of the fore-mentioned Humours, the Mesentery is probably wounded, which is commonly fatal: so that from considering the Nature of the Wound, the Instrument, and the several Viscera of the Abdomen, with their injured Functions, one may nearly estimate the Danger and Consequences of Wounds penetrating the Abdomen, and injuring its Contents.

Q. 138. How do you treat a Wound penetrating the Abdomen, without injuring the Viscera?

A. If

4. If the Wound be very large, the Intestines and Omentum appearing sound, I return them with all convenient speed, then unite the Peritoneum and Integuments together by the interrupted Suture (*Tab. VII. fig. 4.*); which is likewise necessary in large transverse Wounds of the Abdomen, even if they do not penetrate the Peritoneum. But first, if the Intestines are wounded, I unite them loosely with the Glover's Suture; and if any Part of the Omentum appears gangrenous, livid, and cold, I amputate it: but if the Intestines, being sound, are so distended with Flatus, that they cannot be returned, the Wound must be enlarged. The thread with which the Intestine was sewed, or the Omentum tied before its Amputation, must be left out of the Abdomen, in order to bring those Parts to view at the Mouth of the Wound, and to extract the threads when necessary; or that if the Intestine should mortify, the Extremity of it may be brought to the Mouth of the Wound, and there agglutinated to form an artificial Anus, of which we have numerous Instances. But in small longitudinal Wounds of the Abdomen, especially in fat People, the Suture must be omitted, and the Parts united by Bandage and Compress, with sticking Plasters; always observing to keep a small Opening for the Discharge of Humours that may be contained in the Abdomen,

domen, by filling the Aperture with dry Lint secured by a thread. But as the Suture of the Intestines is commonly attended with Inflammation and fatal Consequences, therefore some of greatest Note chuse only to pass a waxed thread round the divided Extremities, so as to bring them to the Mouth of the Wound, and there procure them to unite, either together, or to the Peritoneum itself; though there are several Instances where the Suture has succeeded, not only in Wounds of the Intestines, but also in the Stomach; but Care must be taken to repeat the stitches as seldom as possible, and not to draw the threads too tight.

Q. 139. How do you treat the Patient when there is a considerable Part of the Intestine lost, either by Incision or Mortification?

A. Though such a Case might at first View appear desperate, yet as we have numerous Instances of the upper Part of the Intestine growing naturally to the Lips of the Wound, and forming a new kind of Anus; therefore the Margin of the Intestine is to be stitched to the Lips of the Wound, where uniting, it will become muscular and strong after some time, so that the Patient may survive only with the inconveniency of wearing constantly a tin or silver Receptacle for the
Fæces,

Fæces, which will be continually discharging, but are not near so offensive as those which come naturally from the larger Intestines. The same Method must be taken when the Intestine is mortified, after having amputated the dead Part.

Q. 140. How do you treat the Patient with respect to Medicines and Diet in these Wounds?

A. As here nothing is more to be feared than an Inflammation of the Viscera, which after the most excruciating Pains may turn to a Gangrene, and destroy the Patient; therefore bleeding must be frequently repeated at discretion, while cooling Medicines are used internally, and the Patient kept upon a healing liquid Diet, which affords no Fæces to load the Bowels; such as small Flesh-broths a little acidulated with *Seville* Orange or Limon Juice; Broths of Eels or Cray-fish, clarified Whey, Jellies, Juice of boiled Turneps, &c. In the mean time the Patient must be kept at rest in a convenient Posture, with his Head and Breast raised considerably high, not neglecting the frequent use of emollient Clysters, when the Wound does not penetrate into the large Intestines, which surrounding the small ones and the adjacent Viscera, will communicate the Warmth and discutient Efficacy of the Clyster, almost as well

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as if it was a Fomentation immediately applied to the Parts themselves; but if the large Intestines are wounded, it is evident that the only Stress must be laid upon Laxatives, with cooling and diluent Medicines administered by the Mouth, since Clysters would be extravasated by the Wound into the Cavity of the Abdomen.

Q. 141. How do you treat the Patient, when the other abdominal Viscera are wounded?

A. In the manner before-mentioned (Q. 140.), taking a particular Care to prevent any of the animal Humours from stagnating and corrupting in that Cavity, and excluding the access of the external Air as much as possible, as it is a principal Cause in corrupting or putrifying the Juices.

Q. 142. How do you dress after Wounds in the *Thorax*?

A. After the application of Lint, either dry or spread with some digestive Ointment, with Emplaster and Compress, I apply the Napkin and scapulary Bandage used in the Paracentesis, and most other Disorders of the Thorax. It is made with two pieces of Linnen, the one an ell or more in length, according to the Bulk of the Patient, and a yard wide, which is like a Napkin, to be

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folded

folded four or six times together, and then closely applied round the Body over the Dressings, where the two Extremities are to be fastened either by Pin or Suture, as in *Tab. XIV. fig. 1.* but to prevent this Napkin from subsiding, it is to be fastened to the two ends of the Scapulary before and behind; which last is a slip of Linen, about a yard long, and about a hand's breadth, slit in the middle to transmit the Head and Neck; or else, which is the more commodious way, it may be slit up at each end almost to the middle, which being applied to the back part of the Neck, two of the ends are brought over the shoulders, crossed upon the Sternum, and then fastened laterally to the Napkin on each side *a, d*; and in the same manner are the other ends to be crossed and fastened behind the Back.

Q. 143. How do you dress after Wounds in the *Abdomen*?

A. After slight or small Wounds, the Napkin and Scapulary before described (*Q. 142. Tab. XIV. fig. 1. B C.*) will be sufficient to retain the Dressings: but here I first apply the uniting Bandage (*Tab. II. fig. 30.*) or else a double-headed Roller after the dry Suture, in order to retain the wounded Lips together; avoiding the true Suture as much as possible, except when the danger of a Hernia,

Hernia, or the transverse Course of the Wound makes it absolutely necessary.

Q. 144. Are there not some diseases that require chirurgical Treatment, which come not properly under the Denomination or Distinction of Tumors, Ulcers or Wounds; but are most commonly described and particularized either from the Name or use of the Part affected, or some Type or Characteristick of the Disease?

A. There are; as in the Eye, Blindness and other Defects; in the Ear, Deafness, &c. In the Nose, Polypus and Ozaena, though the last is a species of Ulcer; in the Lip, the defect and deformity called the Hare Lip; in the Throat, scirrhus enlarged Tonsils, and elongated Uvula; the wry or distorted Neck; in the Thorax, the Empyema and Hydrops Pectoris; the Liver and Gall-bladder, Calculi and Imposthumations; the Bladder, Calculi and Ulcers; the Genitals, Venereal Disorders, a Natural Phymosis, Hydrocele, &c.; in the Legs and Feet, Distortions known by the Name of *Vari* & *Valgi*, and the Club-foot; in the Skin, &c. the Psora, Herpes, Tinea or Scald Head; Chilblains, and Burns or Scalds; the former of which are occasioned by too intense a Degree of external Cold; the latter by too violent external Heat; and are a particular species of Inflammation

mation and Ulceration, spreading and penetrating in proportion to their greater or lesser Degree.

Q. 145. What are the principal Diseases of the Eye and Eye-lids that require surgical Assistance?

A. Ophthalmia, or Inflammation; the Cataract; the contracted Pupil; the Fistula Lachrymalis and Excoriations or Ulcusculi on the Edges of the Lids,

Q. 146. How do you treat an *Ophthalmia*?

A. In the beginning cooling and repellent applications to the Eye are proper; these are to be assisted by Bleeding and Evacuations as in other Inflammations (Q. 17.) which must be repeated as often as the Patient can bear them. If the Inflammation does not yield to this Method, Blisters behind the Ears and between the Shoulders, discutient Fomentations, with the use of such internal and general Remedies as the Patient's Constitution requires, whether the Complaint owes its Origin to a scrophulous or scorbutic Habit, or a venereal Lues. Where the Flux of Humours is great, and likely to continue, it may be necessary to have recourse to a Seton or Fontanels between the Shoulders or in the Arm, by which means Revulsion may be made; and in case from the violence of the
Inflam.

Inflammation, a Collection of matter immediately in or behind the Cornea should be formed (commonly called Hypopyon) an Incision may be made with a Lancet in the lower part of the Cornea at about the distance of the tenth of an inch from the Albuginea, making the Opening sufficiently large to discharge the Matter, together with the aqueous Humour (without wounding the Uvea) which is to be forced out by a gentle pressure and direction of the finger. It may then be dress'd with a fine Compress dipped in a cooling Collyrium, secured by bandage as in the Operation for the Cataract. This Operation may be likewise performed to discharge extravasated Blood, when it cannot be dispersed.

Q. 147. What is a Cataract or Glaucoma? and how do you treat it?

A. They are now generally allow'd to be the same disease, and may be defined to be an Opacity of the chrystalline humour, obstructing the passage of the Light and visual Rays of Objects in their passage through the Pupil to the Retina. And there are two methods of curing the Disease, the one by couching or depressing; the other by extracting it. They are of different colours, in different Persons, and the general Criterion of their being fit for the Operation of couch-

ing is taken from that. Of these the Pearl-colour'd, and those of the Colour of burnish'd Iron are esteemed proper to endure the Needle; the White are supposed milky, the Green and Yellow horny and incurable. Previous to the Operation it will be necessary to be assured of the right state of the Retina, which is very readily learned if there is no adhesion of the Cataract from the Light falling between that and the chrystalline Humour, which if the Eye is not sensible of, is a certain indication of another Malady, and absolutely forbids the Operation. Adhesions of the Cataract to the Iris likewise make it hardly adviseable, which may be known by shutting the Patient's Eye and rubbing the Lids a little, then suddenly opening it, you will perceive the Pupil contract if the chrystalline Humour does not prevent the Action by its Adhesion. Yet if the Cataract appears to be very firm, and you imagine the Adhesion slight, it may be attempted. For the manner of performing this Operation, and likewise the Extraction of it, see the Operations. Of these two methods each have their advantages and disadvantages, their friends and opponents, but a very eminent Surgeon, after candidly stating their respective merits and deficiencies, declares himself in favour of the old method of Couching or Depression, and that principally on account of the inflammation

mation and its consequences which attend the Extraction. However he says that in case the Method by Depression should prove ineffectual the Extraction may be afterwards practised. The contracted Iris, Mr *Chefelden* invented a Cure for by making an artificial opening for the Rays of Light to pass thro', and says he has frequently done it with Success: But Mr *Sharp* speaks of it as a very precarious Operation, and I believe it is very rarely practised; however the Method of doing it is described among the Operations.

Q. 148. What is the Fistula Lachrymalis, and how do you treat it?

A. The Fistula Lachrymalis is a Disease so called which takes its Rise from an Obstruction in the lachrymal Sack and Duct, of which an Abscess is most frequently the consequence. As the Treatment of this Disease must be different according to its particular state or degree, we will reduce them to three general heads, under which all lesser distinctions may be comprehended.

1. Simple dilatation of the Sacculus and obstruction of the nasal Duct, without any Inflammation, and the discharge (upon pressure) a Mucus, either quite clear or a little cloudy.

2. Inflammation, Abscess or Ulceration of the same parts, with a discharge of a purulent Mucus, or of Matter.

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3. Ob-

3. Obliteration or Destruction of the natural Duct, attended sometimes with Caries of the Bone.

In the first state of the Disease, the Cure may be attempted by the use of a small Probe, commonly called *Anel's* Probe, which is to be introduced at one of the *Puncta Lachrymalia*, and passed through the *Sacculus* and Duct, to break through any obstruction that may be in the way. The Duct is then to be injected by means of a small Syringe, (see *Table X.*) with a proper injection; and by this method it is pretended the Cure may be easily performed, when there is only an obstruction in the Passages, and the Discharge not very purulent. But it will be necessary to desist from these methods as soon as they give Pain or produce Inflammation. And indeed as it requires some dexterity to be capable of performing the Operation above mentioned (and in Children must be almost impossible, from the difficulty of keeping them still), if the Surgeon has not had sufficient Opportunities to have acquired it, when the *Sacculus* is not much dilated, the Mucus clear, and capable of being pressed out; the Skin and cellular Membrane not inflamed, and no hardness round about; it will be safer and perhaps as efficacious to make use only of a vitriolic Collyrium to keep the Eye-lids clean and cool;

cool; which with a little attention on the side of the Patient to prevent the bag from becoming too full, by frequently and gently pressing out its contents with his finger, by avoiding every thing that may irritate the lining of the Nose, and produce a flux suddenly from the lachrymal Gland; this Disease may in some Subjects for many years, nay even for life be kept from being very troublesome or inconvenient. There are other methods, as Compression and the use of a Seton, recommended by Authors; but their difficulty and uncertainty render them either ineffectual or useless. In the second state of this disease, the Sacculus must be laid open; this is best done before there is any breach in the Skin with a small crooked Bistoury, which should be thrust into the Sack just above the edge of the orbit, and the Incision continued the whole length of the Sack from within outward, taking care not to hurt the hinder part of it. If the Sack is burst the choice of place is already determined, and the Incision must be continued from that orifice upward or downward, or both, as shall be found necessary, in order to divide all that part of the Sacculus which is above the edge of the orbit. The Incision should be dress'd with soft dossils of lint, either dry, or dipp'd in some warm mild Digestive and laid in with a sufficient pressure to keep

keep the upper part of the Sack open ; by this method when the obstruction is but slight, and the Disease consists principally in a Dilatation of the Sacculus, after the Wound is digested and the Inflammation gone off, the Sacculus will contract, and a few superficial Dressings with moderate Pressure will heal it, the lachrymal Fluid will resume its wonted course, and no Disease remain. If this Method does not succeed, you must endeavour to procure a Passage through the nasal Duct, for the lachrymal Fluid ; which may be done by passing through it a silver or whalebone Probe, a piece of Cat-gut, or a plaster Bougie ; and after that has been done a few Days, and the Parts will bear it, the Cat-gut or Bougie may be left in from one dressing to another ; the Injection of a detergent Liquor at each Dressing, by means of a proper Syringe, with a small crooked Pipe, will also be very useful. If a Fungus arises, it may be best destroy'd by the lunar Caustic, and to keep the Eye as free from Inflammation as possible, cooling Collyrias and Cerates, with frequent Dressings, will be necessary ; at the same time a proper Regimen and Medicines must not be neglected. When the Wound is quite healed, the continuance of a moderate Pressure for some time to prevent a Lodgment of Mucus in the Sacculus will be necessary, which will otherwise sometimes happen,

happen, tho' the nasal Duct be free and open. In the third state of this Disease the natural Passage is quite obliterated and destroy'd, and the Bone sometimes carious. To cure this it is necessary to attempt the Formation of an artificial Passage. This is to be done by perforating the Os Unguis, and making an opening through it and the Membrana Narium into the Nose, and treating that opening in such a manner as that it shall most probably remain open for a Passage of the Lachrymal Fluid from the Puncta Lachrymalia after the Sore is healed. The Method of doing it is by thrusting a curved Trocar of the smallest size of those generally used in the Ascites (see *Tab. IV.*) through that part of the Os Unguis that lies behind the Sacculus Lachrymalis, not too far for fear of injuring the Os Spongiosum; when the Instrument is got through, will be known by a Flux of Blood from the Nostril, and the Eruption of Air from the Wound on blowing the Nose. When the Operation is performed, a Tent of Lint should be immediately introduced, of such size as to fill the Aperture, and long enough to pass through it into the Cavity of the Nose, which should remain there a Day or two till the Digestion renders its removal easy. The principal object now is to prevent the granulating Flesh from closing the new Orifice: for which purpose the

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end of the Tent may be moisten'd in *Aq. Vitriol*; or a Piece of *Lunar Caustic*, so included in a Quill as to leave little more than its extremity naked, by which the Granulation will be repress'd, and the opening maintained, while by the daily Use of a Plaster Bougie, or a leaden Canula, the Edges of the Membranes will grow callous, and the Communication between the Sacculus and Cavity of the Nose be render'd perpetual. When the Sore is clean, and fit to be healed, the upper part may be permitted to contract gradually, and no other Dressing but a Piece of Bougie made use of, which should be of such a length that one extremity may lie level with the Edges of the Sore in the Corner of the Eye, and the other be within the Cavity of the Nose some little way beyond the opening it passes through, and this must be used till you judge the artificial opening is perfectly established; the Sore may then be healed with a superficial Pledget with moderate Pressure. This is the Method recommended for the Cure of this Disease in its different degrees, by two of the most eminent *English* Surgeons, *Sharp* and *Pott*, who are both of opinion that the use of the actual Caustery should be laid aside.

Q. 149. What Diseases are the Eye-lids subject to, and how do you treat them?

A. The

A. The Eye-lids are subject to little Tumors, either in their Substance, or on the Surface of them, and are distinguished by particular Names, from the fancied Resemblance to some other things, as Hail-stones, Barley-Corns, &c. When they are moveable, they are easily extracted by Incision, either on the outer or inner Surface of the Eye-lid; and, if otherwise, may be extirpated by the Knife or other means, according to the Opinion of the Operator. The Contents are generally of the same Nature as other incysted Tumors, and the Cyst must be either extracted wholly along with the Contents, or afterwards destroyed and digested away, observing the Caution of not irritating or offending the Eye itself.—There is likewise a Complaint of the Eye-lids, affecting the ciliary Glands, which is the occasion of Redness, and Excoriation along their Edges, attended with a Discharge of Humour. The use of the *Ung. Tutia*, the *Liniment. Ophthalmicum*, and *Astringent Lotions*, are proper for the Cure, with attention to the Habit of Body, which must be treated with proper internal Remedies. But a judicious Application of the *Lunar Caustic* to the Parts, has frequently answered the Purpose, when other means have proved ineffectual. It is scarce necessary to say, that the Application must be very slight, and the Eye protected against

against the Flux of Tears that immediately ensues, and mixes with the lixivial Salts of the Caustic; otherwise Mischief may be done to the transparency of the Coats of the Eye.

Q. 150. How do you treat Deafness; and Pain in the Ear, with Inflammation and Abscess?

A. If the Deafness is owing to the inspissated Mucus of the Ear, commonly called Wax, which will be known by examining the Ear in a clear Day-light, or by the help of a lighted Candle and a convex Lens, to direct the converged Rays to the bottom of the Ear; that Wax must be extracted by the Ear-picker, and, if too hard, may be previously softened, by dropping some *Ol. Rosar.* or *Ol. Oliv.* into the Ear; or else by syringing the Ear with warm Milk and Water, with or without a small Quantity of Venice Soap dissolved in it, it may be washed out. If a Relaxation of the Tympanum, from old Age, repeated Colds, or nervous Obstructions in the parts, is the cause of Deafness, topical Remedies are found to be of very little Service, and scarcely ever used but by Pretenders to Nostrums for this Disorder, whose Practice often renders the Disease worse than before, or produces Inflammations and Abscesses in the Ear, attended with excruciating Pains and the most foetid Discharges.

charges. In case of Inflammation and Pain in the Ear, Injections of warm Milk, with *Troch. Alb. Rhas.* dissolved in it, and decanted after the Powders have subsided; and an Application of Oil dropped into the Ear, with a little Cotton or Lint, and a Cataplasm of *Mica Panis in Lact.* externally, with plentiful Bleeding, cooling Purges, and a Blister in the Neck, are the most efficacious Methods to be taken for the Cure of this Complaint. If it terminates notwithstanding in an Abscess, the Injection of *Aq. Calc.* with a very small quantity of *T. Myrrh.* may be used moderately warm, and often; and the external Parts, if excoriated, from the Sharpness of the Discharge, dressed with *Cerat. Alb. &c.*

Q. 151. What is the *Ozæna*, and how do you treat it?

A. The *Ozæna* is a foul and malignant Ulceration of the pituitary Membrane in the Nose, with or without a Caries of the adjacent Bones, discharging a foul Matter, and attended with a stinking Breath. If this happens in the Cavity of the upper Jaw over the grinding Teeth, it is termed an *Ozæna in antro.* In order to the Cure, Mercurials with a Decoction of the Woods must be given internally, while externally is used a detergent Injection; or else by fumigating with

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with Cinnabar, conducting the Fumes by a Pipe. But for the *Ozæna in antro*, one or more of the superior grinding Teeth are to be extracted, and an Opening made through the Socket with the Point of the Scissars, or some other Instrument into the Sinus, for discharging the Matter, and detarging the Parts with an Injection *ex tind. myrrb. cum mel rosar.* which being once injected into the Sinus, should be retained for some time there with a Tent in the Opening, which must not be suffered to close up till the *Antrum* is well cleansed and healed.

Q. 152. What are *Polypus's* in the Nose, and how do you remove them?

A. These are fleshy Excrescences of the pituitary Membrane, of various forms and sizes, obstructing the Cavity of the Nostrils and Fauces, so as to deprave the Voice, Deglutition and Respiration; being sometimes cancerous, and extremely painful. The Cure will be more or less difficult, as the Excrescence is mild and fleshy, scirrhus or cancerous; and as it is more or less extended, and easily accessible. The most common Method of Cure in Practice is to extract the Polypus by a Pair of Forceps, with Apertures in their Extremities to take the better hold. With these Forceps the Polypus may be extracted by the Mouth, when it appears in the

the Fauces; while the Patient is inclined with his Head back as much as possible, that the Polypus may stretch itself, and come down into the Fauces by its own Weight: but if the Polypus is small and lies forward, the Forceps must be introduced by the Nostril, and the Excrescence that way extracted by the Roots, observing not to leave any Remains, if possible, to prevent a Return of the Disorder. The Remains may be best removed by Escharotics, conveyed to the Part by a Wax-candle or Probe, after they have been mixed with some Digestive, and spread, or else barely sprinkled upon a small Dossil of Lint. If the Hæmorrhage should prove excessive, a little *alcohol vini*, or *Eaton's Styptic*, applied with Lint will suppress it; which may be conveyed to the part in the manner *Le Dran* mentions for destroying the remains of Polypus's, that cannot be wholly extracted with the Forceps; that is, by introducing one Extremity of a large Seton (put on the Fore-finger of the Left-hand) behind the Velum Pendulum, and with the Right-hand sliding a pair of thin crooked Forceps up the Nostril, and taking hold of the end of the Seton on the Finger, he brings it out at the Nostril, the other end hanging out at the Mouth; to which may be tied two Dossils of Lint, the first of which being only clean

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dry

dry Lint, may be drawn quite through and replaced by the other, dipped in any stiptic Liquor or Powder, to restrain the Hemorrhage; this not only stops the Bleeding, but prevents the dripping of the Blood down the Throat, which generally occasions a Cough or Vomiting that increases the Bleeding.

Q. 153. What is a Hare-Lip, and how is it cured?

A. The Hare-Lip is so called from its being divided in the middle, and exposing the Teeth as in a Hare or Rabbit. When the Lip has a double division, like the Letter M, it is then termed a double Hare Lip; but a single Division in the lower Lip, not from the Birth, is termed a spurious Hare Lip.—The Cure consists in an Operation, which will be hereafter described in its Place.

Q. 154. What Diseases are the Tonsils liable to? and what are the Methods of treating them?

A. These Glands are subject to Inflammations, Ulcerations and Swelling, the last of which sometimes become scirrhus. — In Inflammations it is sometimes necessary to scarify the Tonsils, and if they suppurate to open them with a Lancet, which should be invested to near the Point with a Slip of Plaster

ter, and the Tongue depressed with a Spatula or Spoon, that the Part may be the easier got at. The Ulcerations in the malignant sore Throat, generally tending to a Mortification, are of a very dangerous Nature, and require the Assistance of both internal and external Remedies, the last of which being what properly comes under chirurgical Treatment, must consist of detergent and antiseptic Lotions and Gargles, and the Parts should be frequently touched with the *Lotio detergens*, and gargled and injected with the *Garg. contra Putrefact.* or *contra Gang.* the Forms of which are in the Index of Remedies. The internal Medicines being the Province of the Physician to prescribe, does not come under our Direction, neither in this nor the inflammatory sore Throat, therefore are not here mentioned. And the scirrhus Tonsils, and the manner of extirpating them, will be treated of among the Operations, as will also the Operation of Bronchotomy, a Method proposed by some Authors of relieving Persons in danger of being suffocated by a violent Inflammation and Swelling in the Throat, commonly call'd a Quinsy. It will not be improper to take notice here, that where such a Relaxation of the Uvula happens, that it is lengthen'd so as to become troublesome, and cannot be cured by astringent Applications, but may be reduced

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reduced to its proper Size by excision of part of it, with a Pair of Scissars, or the Instrument in *Tab. XIII. fig. 11.* and the Bleeding (if necessary) stopp'd by Styptics.

Q, 155. How do you cure the wry Neck?

A. Either by the use of the Swing, see *Tab. XIII. fig. 13.* or by means of an Operation which is hereafter described in its Place.

Q, 156. What are the Empyema, and its Signs and Symptoms, and the Method of curing it?

A. An Empyema is a Collection of Matter in the Thorax, of which there are two Species, one where the Lungs adhere to the Pleura, and produce an Imposthumation externally between the Ribs; the other where the Abscess of the Lungs, when it breaks, discharges its Contents into the Cavity of the Thorax. The first kind is frequent, the last more rare, or generally thought to be so. The Signs are a continual slow Fever, an Anxiety and Difficulty of breathing, an oedematous swelling of the intercostal Muscles; sometimes the Patient cannot lie with ease on that Side, and feels a great Weight in his Chest, and if there be much fluid in certain Motions it may be heard to quash, and will be attended with an Expansion of that Side
of

of the Chest where it lies. The Cure, where there is an Adhesion and external Inflammation, the Integuments thin and the Matter points, may be attempted by an opening made with a Lancet, and the Wound is to be kept open with a hollow Tent, till the Discharge is lessen'd to so small a Quantity, as to give reason to imagine there is no more than what comes from the Wound itself, or very little; and the Patient breathing freely and being from Fever, the Wound may be dressed superficially, and permitted to heal up. In the latter Species of Empyema, where there is no Adhesion or Pointing, the Symptoms above mentioned being urgent, and the Patient willing, the Cure may be attempted by an Operation which will be described in its proper Place hereafter among the other Operations. In the Hydrops Pectoris it may likewise be performed, but with less Probability of succeeding, from its being generally accompanied with an Aseites or Anasarca; the Symptoms of this Disease are a small Cough without Spitting, a slow Fever from the Difficulty of Respiration, and if the Water is considerable it may be heard to quash, the Patient is sensible of an Undulation, and is obliged to stoop forward when erect, and lie on one Side or his Back, according as the Water is either in one Cavity of the Thorax or both.

Q. 157. What are the Signs of an Abscess or Suppuration of the Liver? and how do you distinguish it from a Tumor of the Gall-Bladder from an Accumulation of Bile; and what is the Method of treating these Diseases?

A. It is very necessary to know the distinguishing Signs of these two Diseases, which are preceded by an Inflammation of the Liver (or Hepatic Colic) the Signs of which are; a Pain in the Region of the Liver, with a hard and painful Tumor of the Part; no Tincture of Bile in the Excrements, but a prodigious Quantity of it in the Urine; during the Suppression of Bile the whole Skin becomes exceeding yellow, and sometimes so in less than 24 Hours.

If the Ductus Cysticus should remain obstructed after the Inflammation is gone off, as frequently it does, the Secretion of the Bile being restored, and meeting with an Opposition to its Passage into the Duodenum, the Bladder will become distended, and form a Tumor in the right Hypochondrium, which from the Fluctuation may be mistaken for an Abscess.

The Symptoms of this Accumulation of Bile are these; the Collection of Fluid is formed suddenly, and the Tumor is circumscribed beneath the false Ribs and Rectus Muscle; the Skin is dry, the Pain soon ceases,

or

or at least diminishes, during the Increase of the Tumor, and the Patient is composed and cheerful. On the contrary, if a Suppuration is coming on, the Pain increases during the Formation of the Tumor, and is of a throbbing Nature; the Patient is exceedingly low and uneasy after the Suppuration is formed, notwithstanding the Pain is abated, the Rigor lasts longer, and is followed with a Heat, and then with a Dampness of the Skin, and the Abscess of the Liver does not evidently terminate at a certain Part, but is lost confusedly in the Tumor, being accompanied also with an Oedema of the Integuments. An opening of the Gall-Bladder should never be made but when it is judged to adhere to the Peritonæum, and the Signs of its Adhesion are its Immobility in every Posture of the Body, and some degree of Inflammation or Oedema of the Tumor, though these last Appearances be gone off, yet if they have subsisted before for any time, it is an Argument of the Adhesion. To open the Gall-Bladder, the tapping it with a grooved Trocar is recommended by Mr Sharp (from whom this Account of the Disease and its Symptoms is extracted) which must be in its most prominent or thinnest part, and when the Bile is discharged the Operator must introduce his Probe to search for a Stone. If he finds one the Orifice must be enlarged.

enlarged by cutting upon the Groove of the Canula, after which he introduces his Fore-finger into the Bladder to be assured of the exact Situation of the Stone, when he finishes the Operation with a Forceps, as in the Highway of cutting for the Stone. If there should be no Stone he leaves the Canula in the Bladder till the Bile finds a Passage into the Duodenum, and the Case becomes nearly the same with the Puncture above the Os Pubis in Suppressions of Urine.

Q. 158. What are the Signs of the Stone in the Bladder?

A. They are (1.) A frequent Inclination to make water, followed with great Pain in the Glans, lasting two or three minutes, and sometimes a Suppression of Urine. (2.) A Tenesmus, or fruitless Attempt to go to stool from the Irritation of the Stone upon the Rectum. (3.) Frequent Discharges of Mucus in the Urine, and sometimes Blood, from the Irritation of the Stone upon the Coats of the Bladder itself. (4.) The Patient not being able to make water, but in a supine Posture, and frequently perceiving the Sense of a Weight or heavy Body moving in his Bladder, and itching in the Glans. But lastly, (5.) As these may be all fallacious, the only sure Sign is by searching with the Catheter, which affords the most certain

Diagnosis

Diagnosis by the Noise and Resistance to be perceived when it strikes against the Stone. When this is the Case, and we are assured of the Patient's having the Stone, the Operation is necessary to be performed in proper Subjects; the detail of which, and the different methods, will be amply explained amongst the Operations.

Q. 159. What Diseases are the Penis and Testicles subject to?

A. Several of the Diseases to which the Testicle is liable have been already treated of; and the Hernia Humoralis is generally an Attendant of the Venereal Disease, as are most of the Disorders of the Penis, and therefore they will be discussed under that Article.

Q. 160. What is the Method of curing the distorted or Club-foot in Children?

A. The Cure of this Complaint is accomplished by wearing a Bandage, which consists of several Pieces of Linen Rag dipt in a Mixture of Whites of Eggs and Flour beat together very smooth. The Point to be gained in this Cure is to get the Foot out strait with the Leg, this must be done by degrees, and by successive Applications of the Bandage till the right Position of the Foot is perfectly effected, and the Part of sufficient

sufficient Strength to keep its proper Situation. When the Bandage is apply'd the Limb must be held in its proper Position till the Bandage is perfectly dry and stiff.—If this Method does not succeed, a Machine adapted to the Disorder may be contrived and made by an Instrument-maker, of whom there are some of the most Ingenious in *London*; and it is the Business of the Surgeon to examine the Mechanism of the Machine and its Application, that it may not be a Means of the wasting of the Limbs by preventing the Circulation with its Compression, or excoriating the Skin with its Friction. Mr *Gooch* has lately given the Public a very ingenious Contrivance for remedying these Defects in the Knee or Ankle, as may be seen in his Observations in Surgery.

Q. 161. What are the Names and the Method of treating Cutaneous Diseases?

A. The most material Diseases of the Skin are the Psora or Itch, the Lepra or Elephantiasis, the Tinea or Scald Head, the Herpes Simplex, Miliaris, Exedens, and Chilblains.

Q. 162. What is the Psora or Itch? and the best Method of curing it?

A. The Itch is an Eruption of Pimples all over the Body, particularly about the Joints

of the Limbs, and between the Fingers: it is an infectious Distemper, soon propagated, and may be effectually cured, by the external use of the *Ung. ad Pforam*, and the internal use of the *Flos Sulphuris*. Previous to the Uction the Patient should be bled, and while the Patient is under Cure he must wear the same Cloaths all the Time, and when the Pustules die away, and the Distemper is thought to be cured, the Patient should be bathed, or at least thoroughly washed with warm Water, and clean things put on. After which he should be bled again, and take some Doses of purging Physic.

Q. 163. What is the Nature and Treatment of the Tinea or Scall'd Head?

A. It is a Distemper most frequently affecting Children, and consists of small Ulcers upon the Scalp arising from a vicious salt Humour corroding the cutaneous Glandules, with different degrees of Virulency, of which the mildest is the dry, branny or scaly; and the worst, the moist and ulcerous. In order to cure it, Attention being had to correct the Disposition of the Blood by proper internal Medicines and Diet; the Hair must be drawn out by the Roots, by a Plaster of Pitch, or other means; after which the Ulcerations may be dressed with Desiccatives, and washed with *Aq. Calcis*, or a Solution of the *Vi-triol*,

viol. Alb. and the Fungus consumed with the lunar Caustic, which will produce a Cicatrix. It is very apt however to return, and very difficult of Cure.

Q. 164. What is the Nature and Treatment of the Herpes?

A. The Herpes may be divided into three Classes; the Herpes Simplex, which is when single Pustules (most commonly in the Face) arise; they are whitish or yellow with an inflamed Basis, and having discharged a Drop or two of Matter, they dry up of their own accord.—The second sort of Herpes, is the Serpigo, commonly called the Tetter or Ring-worm; small Pustules grow together in heaps, sometimes of a round or annular Figure, with a considerable itching; discharging a thin sharp Humour. When they arise from a leprous, or venereal Cause, they cannot be cured without proper Remedies for those Distempers; but the simple Ring-worm often met with in young People is cured with an Application of Ink, or any strong vitriolic Solution.

The Herpes Miliaris is the third Species, and is the same as is called in *England* the Shingles. It consists of a great number of small Pustules terminating in watery Bladders with Redness round them, attended with Sickness, Pain, Heat and Inflammation.
When

When the Bladders dry up, small round Crusts succeed, which in a few days drop off. The Cure consists in Bleeding, Purging, and a slender Diet for the most part; nevertheless Regard must be had lest we check the Eruption of morbid Matter, which Nature is endeavouring to throw off through the Skin. The Bladders may be snipped with the Scissars to discharge the Ichor, and the Ulcerations may be dressed with the *Ceratum album*, or *lapis calaminar.* which will soon heal them. There is a fourth Species called *Herpes exedens*, or corroding Herpes; but as it consists of Ulcerations, it must be consider'd and treated as an Ulcer.

Q. 165. What is the Nature and Treatment of Inflammations and Tumors arising from Cold, call'd Chilblains?

A. Chilblains are Inflammations with Heat, Tumour, Redness, Itching and Pain, from an Obstruction of the Vessels too much contracted, and an Inspissation of the Humours congealed and rendered impervious by the Cold. Before they are ulcerated, when they are attended with a troublesome itching, it may be allayed by bathing them with *S. V.* and Water; after which the *Cerat. Alb.* may be applied. If they are much inflamed, a Pultice of *Mic. Pan. & Lact. & Ol.* may be applied.

applied. Some prefer a Cataplasm made of roasted Turneps, moistened with *Ung. Sambuc.* When they are ulcerated, they must be dressed with the softest and mildest Digestives, and the Patient kept from walking (if in the Heels or Feet) and the parts wrapped up, so as to preserve a moderate degree of warmth.

Q. 166. What is the Nature and Treatment of Burns and Scalds?

A. They may be properly distinguished into four Classes; the first and slightest of which is, when the Vessels are so far injured, as to cause an Inflammation and Redness without a blistering of the Part. The second is when the Cuticle is raised into a Blister attended with great Pain; and these two agree with a resolvable Inflammation. The third Degree is when the Integuments or Flesh are so burnt as to form a Crust or Eschar, which must, as in a Gangrene, be cast off by Suppuration. The fourth and last Degree is when the fleshy Parts are burnt and destroyed to the Bone, so as entirely to deprive them of the vital Circulation; and this agrees with a compleat Sphacelus.

“ When Burns are very superficial, not
 “ raising suddenly any Vesication, Spirits of
 “ Wine are said to be the quickest Relief;
 “ but whether they are more serviceable
 “ than

“ than Embrocations with Linseed-Oil, I
 “ am not certain, though they are used
 “ very much by some Persons whose Trade
 “ subjects them often to this Misfortune. If
 “ the Burn excoriates, I think it is easiest to
 “ roll the part up gently with Bandages dipt
 “ in Linseed-Oil, or a mixture of *Unguent.*
 “ *Flor. Sambuc.* with the Oil: When the
 “ Excoriations are very tender, dropping
 “ warm Milk upon them every Dressing is
 “ very comfortable; or if the Patient can
 “ bear to have Flannels wrung out of it,
 “ applied hot, it may be still better: If the
 “ Burn has form’d Eschars, they may be
 “ dress’d with *Basilicon*, though generally
 “ Linseed-Oil alone is easier, and in these
 “ Sores whatever is the easiest Medicine will
 “ be the best Digestive. I have sometimes
 “ found it necessary to apply different Oint-
 “ ments to Burns, where the Aspect has
 “ been nearly the same, and upon changing
 “ them the Patient has complain’d of great
 “ pain; so that we are oblig’d sometimes to
 “ determine what is proper from Trial. The
 “ most likely things to succeed at first are,
 “ the Linseed-Oil, *Ungt. Flor. Samb. Ungt.*
 “ *Basilicon*, and a Cerate of Wax and Oil,
 “ and afterwards the *Cerate de Lapid. Calam.*
 “ *Ungt. Rub. Desiccat. Ungt. Sperm. Cet.* the
 “ Nutritum with but little Vinegar in it, or
 “ perhaps when the *Fungus* rises, dry Lint.
 “ There

" There is great care necessary to keep down
 " the *Fungus* of Burns, and heal the Wounds
 " smooth, to which end the edges should be
 " dress'd with Lint dipt in *Aqu. Vitriol.* and
 " dry'd afterwards, or they may be touch'd
 " with the Vitriol-Stone, and the Dressings
 " be repeated twice a-day. There is also
 " greater danger of Contractions from Burns
 " after the Cure, than from other Wounds,
 " to obviate which, Embrocations of Neats-
 " foot Oil, and Bandage with PASTE-boards,
 " to keep the part extended, are absolutely
 " necessary, where they can be applied."

This is Mr *Sharp's* Opinion, and is extracted from his Treatise on Surgery. As this Accident is always attended with Pain and Inflammation, it is right to bleed in the Beginning, and during the Cure to keep the Body open by some purging Medicine. If the Burns are occasioned by an Explosion of Gunpowder, the Particles are to be extracted if possible, otherwise they leave an indelible Mark, which in the Face particularly should be prevented.

Q. 167. How many Kinds of *Fractures* do you make?

A. They may be distinguished into three Species, according as they are attended more or less with other Symptoms; namely, into simple, compound, and complicated. *Simple Fractures* are those, where the Bones are divi-

divided only in one Part, without injuring the adjacent soft Parts, as commonly happens when the Radius or Fibula only is fractured, the Ulna or Tibia sustaining the soft Parts and the fractured Bone in the mean time. But a *compound Fracture* is when a Bone is broke into several Fragments without any violent Symptoms; but if attended also with a Wound, Contusion, Inflammation, Hæmorrhage, &c. it is then termed a *complicated Fracture*; namely, when these Symptoms require a Treatment distinct from that of the Fracture itself.

Q. 168. What are the Signs and Effects of a *compound or complicated Fracture*?

A. They are chiefly a Collapsion and Deformity of the Parts, with a Contraction and Distortion of the Muscles for want of their bony Support; a Laceration of the Periosteum and adjacent Vessels, Membranes, Nerves or Tendons; whence Inflammation, Convulsion, Ecchymosis, Suppuration, Gangrene, &c. may follow, according to the degree of Complication and Injury, with the Nature or Fabric of the Part.

Q. 169. What are your curative Intentions in a Fracture?

A. They are, (1.) To replace the Fragments by Extension and Reduction, so as to restore the Bone to its natural Situation:

M

(2.)

(2.) To retain them in that Posture by Compress, Bandage, and suitable Instruments:
 (3.) To forward the Consolidation by a growing Callus, and to treat the concomitant Symptoms, as may be found necessary. The first of these Intentions I compleat by placing the Part in its natural Posture, and making a slow Extension of the Fragments from each other in a right Line, till the contractile force of the Muscles is overcome; and this I do either by the Hands, Slings or Machines, while the Patient is held firm.

Q. 170. Do you directly execute these Intentions in every compound Fracture?

A. If it is attended with any violent Inflammation or Tumor, it is advisable here, as well as in a Luxation, previously to palliate and lessen the Symptoms before the Reduction is attempted: if any protuberant Splinters or loose Fragments seem to hinder the Extension and Reduction, they ought to be first removed by Incision, if they cannot without; but if the Bone is much shattered, so as to destroy the larger Vessels, &c. an immediate Amputation should be made to prevent worse Consequences, if nothing forbids.

Q. 171. How do you know when the Fragments are properly reduced?

A. From a previous Acquaintance with the

the anatomical Structure of the Parts, from the Removal of the Pain, and from comparing the Figure and Length of the injured with the sound Limb.

Q. 172. How do you retain the Fragments in their natural Position?

A. By the application of suitable Bandages, Bolsters and Splints, with other Machines, keeping the Limb at rest, and duly sustaining or directing the Actions of the Muscles, varying the Apparatus according to the particular Nature of the Fracture.

Q. 173. What Time is required to firmly consolidate the Bones by a *Callus*?

A. This will take up from one to two months, more or less, as the Patient is younger or older, of a good or bad habit, the Bone larger or smaller, and the more or less incumbent Weight it must sustain.

Q. 174. What practical Cautions do you judge most necessary to be observed, with respect to Fractures in general?

A. 1. To avoid disturbing the Bones by extending or moving them, if they shall be at first found in their natural Situations; Retention and Deligation alone being in that Case sufficient.

2. To cautiously avoid too strict a Bandage, which may produce a Tumor, Gangrene, and

and the worst Consequences; and yet to order them so as to sit moderately firm, considering that after their first application they will stretch and loosen a little.

3. If the Fracture be attended with great Pain, Inflammation and Tumor, not arising from Splinters; in that Case the Patient must be bled, and the Parts treated with antiseptic Fomentations: but if these Symptoms arise only from the Irritation of the bony Fragments, it will be necessary either to remove or replace them immediately with a due Extension, proportioned to the Age of the Patient and Strength of the Limb.

4. To be particularly careful to make a slack Deligation, when there are loose Fragments; and to relax the Bandage, if the Inflammation increases; and if that, with bleeding the Patient, a Removal of the Splinters, &c. prove ineffectual, a Gangrene and Sphacelus being threatened, the Part ought to be timely amputated.

5. To observe that if a Fragment is large, still adheres to the Periosteum, and is capable of being reduced without much Injury to the soft Parts, it ought not to be extracted or cut off, and the reverse.

6. To observe that the Limb be carefully and gently moved in its Articulations, as often as it can be done with Safety, to disperse the Synovia, and prevent a Stiffness of the Joints; and this more especially if the Fracture,

ture, being seated near the Articulation, gives the Callus an opportunity to shoot up and form an Anchylosis, by cementing the Heads of the Bones, or stopping up the Cavity of the Joint.

7. To avoid the common Custom of applying Bole or other sticking Plasters immediately to the Skin, not only in Fractures but in Luxations, when it is much better to apply a Compress dipped in *oxycrate, sp. vini campb. &c* because the former are not only troublesome to remove, but likewise obstruct the Perspiration, and often inflame the Part, at the same time that they afford little or no use as a Retentive.

8. That if the Bones in a simple Fracture should by any Accident be united in an improper Posture by the Callus, so as to endanger a Deformity or Lameness; if the Callus be recent, or not too much indurated, and the Patient strong and of a good Habit, it may be proper to separate the Bones again, and reduce them to their just Positions by breaking the Callus; but this not without the Advice and Assistance of one well experienced, as it may be attended with very dangerous Consequences.

9. To observe that in young and warm Habits, the Circulation ought to be moderated at discretion, by Bleeding, spare and low Diet, &c. in order to prevent a Luxuriancy of the Callus: and that to forward the Formation

mation of it in old and weak Habits, the Patient's Strength must be kept up with Cordials, and plenty of good Nourishment.

10. If there is a small external Wound, in a compound Fracture, it will be proper to enlarge it so as to make room for the Extraction of Splinters and Fragments of Bones, coagulated Blood, or any extraneous Bodies; and to free any membranous Strictures that may be felt on Examination by the Finger either by the help of Knife or Scissars; and this should be done at the first, before any Inflammation or Tension of the Parts come on. And in some cases where a large Portion of the whole Bone protrudes, it may be proper to saw it off, which is a Practice that has often been attended with the saving of a Limb, Nature having most wonderfully supplied the Loss with a Callus, sufficiently firm to support the Weight of the Body in the Room of the extracted Bone. A strict cooling Regimen, plentiful Bleeding, laxative Medicines, and in cases of great Pain, the use of Opiates, where there is great Laceration or Tension, must be strictly observed; and if there is any Danger of a Gangrene, such Remedies as are recommended for that Purpose must be timely made use of, with a proper Regard to the Age, Strength and Habit of Body of the Patient.

Q. 175. What is a *Luxation* or Dislocation?

A. This is distinguished into *perfect*, and *imperfect*; the latter call'd a *Subluxation*: the first is, when the moveable Head of any Bone is displaced from its Articulation, so as to impede and destroy the Motion and Office of the Part; but the latter is, when the Ligaments only are strained, the Bone either slipping again into its place, or remaining but a little distorted. The *perfect* Luxations happen chiefly in Bones articulated by *Diarthrosis*, having a manifest and ample Motion, as in those of the upper and lower Extremities; but the *Subluxation* is more peculiar to the *Synarthrosis*, where there is little or no Motion, as in the Bones of the Carpus, Tarsus, &c.

Q. 176. How do you discover a *perfect* Luxation?

A. (1.) From an Immobility and Disfiguration of the Limb, which appears distorted, and longer or shorter than it ought to be. (2.) From an Excavation upon the Joint, and a Tumor where the Head of the Bone is thrust, the lower Head of the Bone appearing distorted in an opposite direction to the upper Head. (3.) By feeling with the fingers, and enquiring into the Patient's Account of the Accident, with the Severity of

the Symptoms, and a Knowledge of the Articulation.

Q. 177. What are the principal *Causes* of Luxations?

A. These may be either external or internal, or both concurring together. Under the former are included Falls, Blows, Strainings, &c. the internal are a Laxity and Weakness of the Ligaments, and a Tumor of the mucilaginous Glands, or a Congestion of Humours in the Cavity of the Joint; but when the Dislocation proceeds from these last Causes alone, the Joint is usually free from Pain, Inflammation or Tumor, and the Head of the Bone may easily be slipped into and out of its Cavity.

Q. 178. What are your curative Intentions for a Luxation in general?

A. They are (1.) to extend the Limb, so that the Head of the Bone may be free from Obstacles on any side; (2.) by reducing the Head of the Bone into its proper Situation, which follows almost spontaneously, usually with a noise when the Limb is duly extended in a proper direction, especially if there is the least assistance given to it by the hands; (3.) to retain the Bone by suitable Deligation, till the Ligaments have recovered their due Tone, keeping the Limb and Body in a
just

just Posture. But these Means are to be varied according to the particular Nature of the Joint luxated. — For Cautions here consult those mention'd before for Fractures (Q. 174.)

Q. 179. How do you discover and cure a Luxation of the Head?

A. A Dislocation of the Head in its Articulation with the *Atlas* or uppermost Vertebra, readily discovers itself by the Distortion of the Chin thence following, either forward, or to one side; but this, as it compresses the Medulla oblongata passing from the Brain and Cerebellum, is constantly attended with sudden Death, unless some Person in the very Instant lifts the Patient up by the Head from the ground, or otherwise makes a Reduction by extending the Neck. Thus the chondyloide Processes of the Occiput may easily slip out of their glenoid Cavities in the first Vertebra of the Neck, by a Fall from a Horse, or from any high Place, in which Case the Chin is usually distorted close down to the Breast; and as this Luxation without immediate Assistance brings sudden Death, it is commonly called a breaking of the Neck, but is more properly a Dislocation of it.

Q. 180. How do you treat Luxations of the Spina dorfi?

A.

A. The Vertebrae of the Spine are so strongly articulated together by robust Ligaments and Cartilages, with oblique ascending and descending Processes looking one into another, that they cannot well be dislocated without a Fracture of the Processes; in consequence of which the spinal Medulla being wounded or compressed, a Palsy of all the Parts below the Injury must follow, the Urine and Faeces come away involuntarily, and a Distortion appears in the Spine either backward or to one side, where the Luxation is made. The Case is more fatal, as the Injury is nearer the Head; and though most Patients miscarry rather from the Injury of the contained Medulla, than the difficulty of reducing the Bones (which is not small); yet trial ought to be made whether any Relief can be afforded by Art. The Spine is therefore to be extended by inclining the Patient over a Cask, or other cylindric Body, which naturally restores the Vertebrae to their proper Situations, provided, if the Disorder is lateral, that the Patient is inclined in this Posture towards the other side; and then the fractured or dislocated Processes may be restored by the Fingers. After applying a Compress dipped in *sp. vin. campb.* retained by the Napkin and scapulary Bandage (*Tab. XIV.*) the Patient is to be bled, treated with
proper

proper Medicines, and retained in a convenient Posture in his Bed.

Q. 181. How do you treat a Luxation of the nasal Bones?

A. These may indeed be beat flat, by a Blow or some other Violence, in Children, but hardly without a Fracture in Adults; and in either Case they are to be raised again by a Goose-quill, or some other such cylindric Instrument, replacing them in the mean time by the Fingers applied externally, and completing the Dressing with a bit of sticking Plaster, retained by the nasal Sling, *Fig. 7. Tab. XIV.* applied with its Aperture *a* transmitting the Apex of the Nose; I then carry its two upper Heads *b b*, obliquely downward behind the Occiput, where being crossed they are then tied upon the Forehead *c c*, by the knot *d*; then the lower Heads *e e* are carried obliquely upward over the Cheeks and Temples *f*, crossed upon the Occiput, and tied on the Forehead *g g*. Some indeed introduce a Pewter Canula into each Nostril, and apply Splints externally, which is seldom necessary.

Q. 182. How do you treat a Dislocation of the Jaw?

A. Notwithstanding the firm and artful Articulation of this Bone, it has sometimes either one or both of its round Heads thrust out

out of the glenoide Cavities of the Os petrosum, into which they are articulated, and this either by yawning, or some other Violence. If both Heads are luxated, the Mouth gapes wide open, the Chin is thrust down to the Breast, and the Patient can hardly speak or swallow at all; but if only one Head is dislocated, the Chin inclines towards the opposite side. In either Case, the Patient being seated on the Floor, and held by an Assistant, I introduce my two Thumbs wrapped in a clean Napkin, as far as possible, into the Patient's Mouth, while my Fingers come under the sides of the Jaw, which I thus press downward and backward, but mostly towards the injured side, when only one head of the Jaw is displaced; which is rarely the Case. Then after applying a Compress dipped in Vinegar, *sp. vin. campb.* I use the Bridle or Sling with four Heads, (*Fig. 7. Tab. XIV.*) about an ell long, and five or six fingers breadth, and applying the Aperture to the Chin, the two upper Heads are crossed upon the Occiput, and then tied upon the Forehead *c c* by the knot *d*, while the two lower Heads are carried up by the Cheeks *f*, and tied upon the Vertex *g*, or else carried down again and tied under the Chin.

Q. 183. How do you treat a Fracture of the lower Jaw?

A.

A. I first apply my Forefinger of one Hand within the Jaw, and endeavour to replace the Fragments by those of the other Hand without; and if any of the Teeth are displaced, I replace them immediately, since they have been often observed to grow again: if there should be any loose fragments incapable of Reduction, I extract them as soon as possible, either by Incision, or as soon as a Suppuration will allow; and compleat my Dressing for the first time with a Compress dipped in *sp. vini vel acet.* applied internally, while externally I adapt another Compress, moistened as before, and fastened to a piece of strong Pastboard cut in the shape of a half Jaw; and this I repeat on the other side if necessary, and retain them by the Bridle before-mentioned in a Luxation (*Tab. XIV. fig. 7.*), observing to bleed and treat the Patient with a proper Regimen and Medicines, according to the Circumstances of the Case.

Q. 184. How do you discover and treat a Luxation and a Fracture of the *Clavicle*?

A. This Bone hardly admits of a perfect Dislocation, without breaking the Ligaments which connect it at each end to the Sternum, and to the Processus Acromion Scapulæ; in either of which Places the dislocated Head may be felt, the Patient not being able to lift up the Arm to his Head. But the Clavicle

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is much more liable to a Fracture, from its Weakness and transverse Position; which when it happens may be easily discovered by the Fingers, as this Bone lies immediately under the Skin. After the Fragments are reduced, as in a Luxation of it, by ordering a strong Man to pull back the Patient's Shoulders towards each other, against a narrow-backed Chair, or some other Support, while the Fingers conduct them properly before: and if the Fracture is not oblique, the two Ends of the Bone will sustain each other, if they are guarded with a Compress of Emplaster rolled up with two Heads, as in *Tab. II. fig. 2. O O P P.* and applied on each side above and below the Bone. Over this is to be applied a Compress and piece of Pasteboard; then another Compress to be retained by the Capeline Bandage, *Fig. 8. Tab. XIV.* or by the simple Spica, *Fig. 2. Tab. XV.* when the Fracture is next the Shoulder; which is to be kept extended by a Roller pass'd several times round the two Shoulders, and crossing upon the Back like a figure of 8.

Q. 185. How do you treat a Fracture of the *Scapula*?

A. This Bone is seldom broke but in its Acromion or Process which meets the Clavicle; in which Case the strong Contraction of the deltoide Muscle makes it difficult to retain

retain the Fragments so together, as to prevent the Callus from shooting out longer than it ought; whence the free Motion of the Arm upwards will be impeded after such a Fracture: but in the mean time this must be remedied as much as possible, by keeping the Arm raised with a Ball fixed in the Axilla, a Compress above, and the whole retained by the spica Bandage, *Tab. XV. fig. 2.* A Fracture in the Neck of the Scapula (which seldom happens) is extremely difficult to reduce, and often attended with the worst Consequences, from the Vicinity of the large Nerves, Blood-vessels, Ligaments, &c.

Q. 186. How do you treat a Fracture or Depression of the *Sternum*?

A. To raise or reduce the Fragments to their proper Situations, I lay the Patient with his Back leaning over a small Cask, or some other cylindric Body, and at the same time press the two sides of the Thorax together with my Hands, while an Assistant thrusts down his Shoulders; and if this does not suffice, I make an Incision through the Integuments, and endeavour to raise up the Part by a Screw, and if any considerable quantity of Blood should be extravasated betwixt the Duplication of the Mediastinum, or into the Cavity of the Thorax, it must be discharged in the

the first Case by trepanning the Sternum, and in the last by the Paracentesis, as before, to prevent an Empyema.

Q 187. How do you treat a Luxation and Fracture of the Ribs?

A. Their Heads next the Spine may be displaced either upward, downward, or inward; the two first are more easily reduced, by raising up the Patient's Arm over a Door, Board, or the like, endeavouring to replace the Bone by the Fingers, while the Ribs are thus drawn asunder: but the last is more difficultly reduced, by ordering the Patient to take a deep Inspiration, while he is inclined forward over some cylindric Body; and if this with the Assistance of the Fingers will not suffice, the Bone may be left dislocated, provided there are no violent Symptoms; otherwise an Incision must be made, to replace it by a Hook, or with the Fingers.—A simple Fracture of the Ribs is not dangerous; but when their Extremities start either thro' the Pleura inward, or the common Integuments outward, the danger is considerable; especially in the former, as the Consequence may be a violent Fever, Pains, Extravasation, Empyema, &c. If the Extremity of the fractured Rib projects outward, the Patient must be placed as above for a Luxation, and the Fragments gently pressed into their Places by

by the Fingers ; but when they point inward, the Patient must fetch a deep Inspiration, and then the sides of the Thorax must be shook and pressed together by the Hands next the Sternum. After the Reduction of the first, Pasteboard Splints are secured upon the Fragments, to prevent their rising outward ; but in the latter there is no occasion for them, only thick Compresses are to be secured along the Ends of the Ribs near the Sternum, and the Dressings retained by the Napkin and Scapulary before-mentioned (Q. 155.)

Q. 188. How do you treat a compound Fracture of the *Ribs*, with a Wound of the intercostal Arteries, Muscles, &c.?

A. In the first place I endeavour to suppress the Hæmorrhage as soon as possible, by tying a piece of Linen rolled up into a Cylinder in the middle of a strong waxed thread, one end of which being passed round the Rib by a Needle, I draw the Compress over the Sulcus in the lower edge of the Rib ; and then by tying the thread hard round the Bone, by that means compress the intercostal Artery and Vein : and if any Splinters or irritating Fragments appear wounding the Pleura or adjacent Muscles, I either replace them, or else extract them with or without Incision, as shall be found most convenient.

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Q. 189. How do you treat Luxations and Fractures of the *Vertebrae*?

A. These cannot be displaced without a Fracture of their interfering Processes, and without the utmost hazard of the Patient's Life; because the Medulla Spinalis being compressed or wounded, will produce a Palsy of the Parts below; whence it is evident, that these Luxations are no less dangerous than difficult to reduce: in order to which the Patient is to be laid, when the vertebral Processes are displaced, on both Sides, inclined over a Cask or other cylindric Body; but inclining more to the sound Side, if they are displaced only on one Side, while in the mean time an Attempt is made by the Fingers to replace them; which done, a Compress is applied, dipped in some antiphlogistic Liquor, and then a Pasteboard Splint retained by the Napkin and Scapulary. But if any loose Splinters injure the Spinal Medulla and adjacent Parts, they must be removed by Incision, if they cannot be replaced.

Q. 190. How do you treat a Fracture and Dislocation of the *Os sacrum* and *Coccyx*?

A. If the *Os sacrum* should appear to the Touch fractured by some Fall, Blow, or other Violence, the Fragments are to be replaced by the Fingers applied externally, when they point outward; or if they point inward,

inward, by introducing the Finger into the Anus; and after the Reduction, Compresses are to be retained upon the Part by the T Bandage, and the Patient is to lie on one side or the other alternately; or if he sits, it must be in a Chair with a hole in the bottom, to prevent any displacing of the Fragments by Pressure. A Fracture or Dislocation of the Os coccygis is to be treated in the same manner.

Q. 191. How do you treat a Dislocation of the Femur?

A. The round Head of this Bone is so strongly articulated into the deep Acetabulum by the round and capsular Ligaments, secured by very thick incumbent Muscles, that it is almost impossible for it to be dislocated by any Force, without a previous Relaxation, or a Tumor of the mucilaginous Gland lodged in the Cavity; from whence, and from the Friability of the Neck of the Femur, as also from innumerable Dissections of Bodies thus affected, it is evident that the Femur happens to be fractured in its Neck nineteen times to one Dislocation; so that what is commonly taken for a Dislocation of the Femur, is in reality a Fracture of its oblique Neck. Yet it must not be denied, that in weak, cachectic and scorbutic People, and in Infants or Children, and sometimes, though

very rarely, in robust Men, the Femur may by some Violence be dislocated, and that most commonly downward, and inward or forward towards the Opening in the Os pubis; in which Case the Knee and Foot straddle outward and backward, the diseased appearing longer than the sound Leg; the Head of the Bone is also perceptible below the Inguen, where by compressing the Nerves of the Bladder, it sometimes causes a Suppression of Urine, and a withering of the whole Limb from the same Pressure on the crural Nerve, if the Bone is not speedily reduced; as must be attempted by making a moderate Extension, either by the Polyspaston, or by the Axis in Peritrochio, *Fig. 3. Tab. VIII.* while the Patient's Body is properly secured; and then by turning the Knee and Thigh inward, the Head of the Femur is to be directed by the Hand into the Acetabulum.—But it may be also displaced upward and backward, when the Limb will be shorter, the Foot will turn inward, the Heel will be raised from off the Ground, and the Limb will be more capable of Flexion than Extension. It is observable, that a Dislocation or a Fracture of this kind is commonly attended with a wasting of the Limb, from the more or less Injury offered to the crural Nerve.

Q. 192. How do you distinguish a Fracture from a Luxation of the *Femur*?

A. The Knowledge of this is no less difficult than the Cure, as the Joint is covered with such strong and thick Muscles, which resist an Extension, and Reduction; and the latter especially is opposed by the Synovia, inspissated in a great quantity, if the Bone has been out any time: however, if I find the Limb may be turned about without any grating of the Bones at the Joint; and if the Symptoms of Pain, Inflammation, Tumor, &c. are slight or nothing considerable, I conclude there is no Fracture; which is indeed difficult enough to discover in fat People, but is more difficult to cure without a Halting or Shortness of the Limb; partly because the Fragments cannot be easily replaced by the Fingers, as they are covered with such thick Muscles; partly from the difficulty of retaining them from being displaced by the strong contracting Muscles; and partly from the oblique Direction of the Neck of the Femur. If then the Neck of the Femur appears to be fractured from the grating of the Bones, the Acuteness of the Pain felt above the Articulation upon setting the Foot to the ground, and the Shortness of the Limb, a violent Extension must here be carefully avoided, that the Fragments of the Bone may not be distended from each other to the great Injury

of the soft Parts ; only such an Extension must be made, as will suffice to bring the Fragments even with each other, and to make both Limbs appear of an equal Length. The Fragments are to be retained together by a strict Bandage, the *Spica inguinalis*, (*Tab. XV. fig. 3.*) ; and then the Limb may be kept extended at its due Length by the Axis in *Peritrochio*, (*Fig. 3. Tab. VIII.*) while the Patient's Body is retained firm by Napkins fastened to the Head of the Bed.

Q. 193. How do you treat Fractures in the Body of the *Femur* ?

A. A simple transverse Fracture is the most easy to cure, as the Bones then sustain each other, and resist the Contraction of the Muscles ; but an oblique Fracture is hardly curable without some Inequality of the Callus, or shortening of the Bone, unless the Limb is kept extended by the Apparatus described *Tab. VIII. fig. 3.* So soon therefore as the Fragments are replaced, I apply Compresses dipped in Vinegar, and make them press upon the Part by the spiral inverted Bandage applied moderately light ; then I apply three Splints of slit Deal glued upon Leather ; and lastly, a large Splint extending from the Hip to the Ankle to keep the Limb strait. But in a compound Fracture, where there are loose Fragments, and a Wound externally,

ternally, the Case is very dangerous; from the Injury offered to the adjacent Nerves and Blood-vessels; whence violent Inflammation, Suppuration, Fever, Convulsions, &c. and as the Wound will require frequent Inspection, and a particular Treatment, with Cataplasms, Fomentations, &c. it will be here necessary to apply the foliated Bandage with eighteen Leaves, *Tab. VIII. fig. 1.* as in a compound Fracture of the Leg. If any considerable Ecchymosis appears, Incisions are to be made, that the Blood may discharge itself; then fomenting the Parts with an Infusion of *Theriac. in sp. vin. camph. cum aq. calis p. c.*

Q. 194. How do you treat a Luxation and Fracture of the *Patella*?

A. The *Patella* seldom suffers a perfect Luxation, unless the Knee is dislocated at the same time, or unless the strong Ligaments are broke, which would otherwise restore it again to its proper place. When it is displaced, it must be on the out or inside of the Joint, since it cannot be thrust up above without a Rupture of its connecting ligamentary Aponeurosis at the *Tibia*, which is a Case frequently mistaken for a Fracture of the *Patella*, when in reality the whole Bone is contracted upward by the Muscles of the Thigh, while a Portion of its tendinous Li-

gament remains below adhering to the Tibia, and feels like a transverse Fragment of the Bone, as Mr *Deverell* observes, *Phil. Trans.* N^o 365. p. 44. nor is it difficult to replace this Bone when dislocated. — A Fracture of the Patella may be either longitudinal or transverse, the last of which is the most frequent and difficult to reduce: but a compound Fracture, when this Bone is shattered, is still worse, and much endangers the Stiffness of the Joint, from a Luxuriancy of the Callus into the Articulation, which is the chief Accident we have to guard against in this Case, and which may also in part proceed from an Inspissation of the Synovia, since the Limb is obliged to be kept a long time extended. A longitudinal Fracture of the Patella is easily reduced, and as easily retained by the uniting Bandage with suitable Compresses, namely, a double-headed Roller, as in *Fig. 11. Tab. XIV.* placed on each side; but in a transverse or compound Fracture, after a careful Reduction, and the Application of a Plaster, or a Compress dipped in some antiphlogistic Liquor, a double-headed Roller is taken of about three ells long, and three fingers broad, applying the middle immediately above the Patella *a*, *Fig. 10. Tab. XIV.* from which descending with a circular round *d*, the Roller heads are crossed in the Ham, thence brought forward
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and crossed below the Knee, then carried back, crossed again in the Ham, and the same Course repeated as before, like a figure of 8, as long as the Roller lasts; and then the Leg is to be kept extended by Splints, or a wooden Box.

Q. 195. How do you treat a Dislocation of the *Knee*?

A. This is when the Tibia slips from under the Head of the Femur, either on one side or backward; but hardly ever forward, from the Resistance of the Patella with its strong Tendons: for so firm is the whole Articulation, that a perfect Luxation seems hardly practicable without a Rupture of the Ligaments. There is no difficulty in reducing this Joint after a due Extension, unless the Ligaments are broke, which may be attended with most excruciating Pains, Convulsions, &c. if not timely relieved: but in both Cases great Care must be taken to prevent a stiff Joint, by giving it a little Motion every day. The same Bandage with Paste-board Splints will suffice here, as for a Fracture of the Patella (Q. 194.)

Q. 196. How do you treat a Luxation of the *Fibula*?

A. As this is sometimes separated from the Tibia, and distorted either upward or downward,

ward, when the Foot has been luxated outward; it will be proper in this Case to adjust its Situation, and retain it by a Bandage and Compress moistened with *acet. & sp. vini campb.* till the Ligaments have recovered their due Strength.

Q. 197. How do you treat a Fracture of the Leg?

A. If the Fibula only is fractured, there is seldom occasion either for Extension or Reduction; and a Fracture of the Tibia readily manifests itself from the Nakedness of that Bone, which also gives a better Opportunity of adjusting the Fragments, if they point outward. To discover the Nature of the Fracture, I grasp the Calf of the Leg with one Hand, and cautiously move the Foot about with the other, so as to feel the Motion of the Bones by the Hand on the Leg. If the Fracture be compounded or complicated with a Wound, Splinters, Contusion, &c. I remove the Fragments or other foreign Bodies, suppress the Hæmorrhage and Inflammation, replace the Bones, and dress up the Limb with convenient Topicals and a foliated Bandage, *Fig. 1. Tab VIII.* and finally, the Leg is to be retained in a wooden Box for the purpose, *Tab. IX. fig. 12.* in which the former represents the whole put together, as the latter represents the several Parts asunder.

der. In *Fig. 1.* *a* represents the Foot-board, which together with the Side-boards *fig.* are let down by the Hinges marked *d d* in *Fig. 2.* But when the bottom of the Machine *a a* is placed under the fractured Leg, the Foot-boards and Side-boards are drawn up and fastened by the Hooks *e e.* *ff.* *Fig. 2.* represent the Basis of the Machine, which is raised higher or lower by means of the Pedestal *b* moving in the Notches *b b*; *g g* denote the Hinges which join the Basis and Bottom of the Machine together.—Over the Floor or Bottom of the Machine *a a* are nailed pieces of strong Ticken, upon which the Limb may rest with more Ease than upon the Board. The other Parts of this Machine compared with the entire Figure are sufficiently obvious.

Q. 198. How do you treat a Dislocation or Fracture of the Bones of the *Foot*?

A. The Foot is sometimes dislocated either outward or inward, forward or backward, by jumping or other violence, as may be readily perceived by the Distortion and Posture of the Joint, the Foot inclining in an opposite Direction to the Dislocation; but a Dislocation of the Ankle outward can hardly happen without breaking the lower Head of the Fibula, or tearing it from the Tibia, which is often attended with the most violent Inflammation,

mation, Pain, &c. even though there be no real Luxation; and therefore to attempt a Reduction would be here highly mischievous. If the Case is only a violent Strain or Laceration of the Ligaments without a Luxation, it will be convenient to bathe the Parts with *acetum Lithargyritum*, and put the Foot frequently in cold Water: but if the Ankle is dislocated, an Extension must be made by two Assistants, one taking hold of the Instep and Heel, while the other holds the Patient's Knee, and then the Astragalus with the lower Head of the Fibula are to be replaced by the Fingers, retaining the Compresses and Splints, when necessary, by the tarsal Bandage, *Tab. XIII. fig. 1. E.* made with a single or double-headed Roller, fastened first round the Ankle, then carried round the Instep, intersecting each other in the bending of the Instep like a figure of 8 about the Foot and Ankle.

Q. 199. How do you treat a Fracture or Luxation in the Bones of the *Tarsus, Metatarsus*, and *Toes*?

A. These from the Number and Vicinity of the Nerves, Tendons, &c. are often attended with violent Symptoms, and no small Danger; but, like other Bones, a Reduction of them is not likely to be accomplished without a perfect Knowledge of their Articulations

culations and Positions with respect to each other; whence it is evident, that a strict Examination of the Joints, furnished each with their respective Cartilages, Ligaments, Glands, &c. as they appear in a recent natural Skeleton, is an Article of the highest Importance in Surgery. After the Reduction, the Splints and Compresses are to be retained with the Bandage last mentioned.

Q. 200. How do you treat a Luxation or Fracture in the Bones of the *Fingers*?

A. By a gentle Extension and Reduction as in others, retaining the Compresses and Splints by the glove Bandage, *Fig. 6. Tab. XV.* when the Disorder extends to several of the *Fingers*: but in compound Fractures of the *Fingers* with a Wound, I dress each of them apart with little foliated Bandages like that for the Leg, *Fig. 1. Tab. VIII.*

Q. 201. How do you treat Fractures and Luxations in the *metacarpal* or *carpal* Bones?

A. By extending them flat upon a Board or Table, as in those of the Tarsus and Metatarsus, and then reducing them by pressing with my Hands and Fingers: after the Bandage, I keep the Hand and Carpus extended betwixt two pieces of Pasteboard lined with soft Compresses.

Q. 202.

Q. 202. How do you treat a Luxation of the Hand in the Joint of the *Wrist*?

A. This, like the Ankle, may be dislocated four ways; but more easily forward or backward than laterally, because the Carpus is guarded on each side by the Heads of the Radius and Ulna. The Reduction is made by extending the Hand over a Table, replacing the Bones by pressing with the Fingers, and retaining with Compress, Splints and Bandage.

Q. 203. How do you treat a Fracture in the *Cubitus*?

A. As the Cubitus or lower Arm contains two Bones, the Radius and Ulna, the former of which has a free rotatory Motion without being connected like the other to the Humerus, it is evident that a Fracture may happen either in one or both of these Bones. If one Bone is sound, it proves a better Support than either Splints or Bandage; but when the Fracture happens in the lower Part, it is strongly drawn aside by the adjacent pronator quadratus Muscle towards the sound Bone, which with the other Circumstances of this Fracture may be readily perceived by feeling and moving the Bones with discretion. If a Fragment of the Radius is contracted towards the Ulna, I order an Assistant to hold the Arm, and incline the Patient's Hand towards the Ulna,

Ulna, to draw back the contracted Part of the Radius; which being restored, together with the quadratus Muscle, to a due Situation, I retain them by the Application of convenient Compresses, Splints and Bandage: but in setting a Fracture of the Ulna, I incline its Head towards the Thumb, and proceed as before. If both Bones are broke, a convenient Extension is to be made, when necessary, in a right Line, reducing and retaining the Fragments as before.

Q. 204. How do you treat a Dislocation of the *Elbow*?

A. In this Joint the Head of the Humerus and Ulna are articulated mutually into each other like a Hinge, which is termed *Ginglymus*; so that it is very difficult for a perfect Luxation to happen here, without the Olecranon (or Head of the Ulna, called the Elbow, analogous to the Patella) should chance to be broken off. If the Cubitus be luxated backward and upward, which is most frequently the Case, (it being more difficult for it to recede laterally, and impossible forward, without a Fracture of the Olecranon) the Arm becomes shorter, cannot be extended, and is accompanied with the most severe Pains, Inflammation, &c. from the Distension of the Ligaments and Tendons, which if not timely relieved may produce Convulsions, Vomit-

Vomiting, Fever, Gangrene, and Death: nor is it easy to replace this Bone, if it has continued any time out; though this must be endeavoured by a pretty strong Extension, made by two Assistants, till one can feel the Bones at liberty in the Joint to be replaced. After the Reduction, the Inflammation must be taken off by bleeding and fomenting, cooling Purges, &c. securing the Joint with Compresses dipped in *sp. vini camph. vel acet.* and retaining them by a moderate Bandage applied as for bleeding in the Arm, *Tab. XIV. fig. 1. D.*; which is to be afterwards suspended in a Napkin or Sling hung about the Neck, *Tab. X. fig. 7.*

Q. 205. How do you treat a Fracture of the *Humerus*?

A. A Fracture near the upper or lower Head of this Bone, is much more dangerous than in its middle, as the large Blood-vessels and Nerves lie near; and an oblique Fracture in a strong muscular Patient, is very apt to contract or shorten the Limb by the Ends of the Bone riding the one over the other, whereas they sustain each other, when the Fracture is transverse. In order for the Reduction, the Arm is first to be extended by two Assistants, one holding the Patient's Shoulder above the Fracture, and the other (taking hold of the Arm below the Fracture, with

with the Elbow a little bent) continues to extend it gently forward in a right Line, while the Fragments are in the mean time reduced to their proper Situations by a judicious Application of the Hands and Fingers; and lastly, after the Application of a Roller dipped in Vinegar, the Arm is secured with three Splints and Compresses, as at *Tab. X. Fig. 7.* *aaa* tied over the Bandage by the Strings *bbb*, making the knots on the outside of the Arm, which is suspended by a Sling or Napkin about the Neck *ccc* tied in a knot upon the Shoulder *d*, and sustaining the Pasteboard Case *e* when the Fracture is in the Cubitus, this last being unnecessary in a Fracture of the Humerus.

Q, 206. How do you treat a Luxation of the *Humerus*?

A. This Joint from the Length and Laxity of its Ligaments, with the Largeness of its Motion, and the Shallowness of the Cavity in the Scapula, is extremely liable to Dislocation; in which the round Head of the Humerus may be displaced either forward, backward, or obliquely downward in the Arm-pit, or even below the Scapula, but seldom perpendicularly downward, and never upward without a Fracture of the Acromion and coracoid Process of the Scapula; to which add the Resistance of the strong del-

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toide and bicipital Muscle. The displaced Head of the Bone may, for the most part, be readily perceived by the Fingers applied to the Axilla; and if it is found forward and downward, it will be apt to compress the axillary Nerves and Blood-vessels, whence a Numbness of the Fingers and Arm, with a Palsy, &c. may follow. Here therefore it will be necessary to make an Extension as soon as possible, keeping the arm in a right Line, while the Head of the Humerus is agitated one way or the other, so as to direct it by the Hands towards the Cavity in the Scapula. If the Hands alone are not sufficient for this purpose, it may be convenient to make use of the Machines, *Tab. VII. and VIII.* The Bandage here is the simple Spica, *Tab. XV. fig. 2.*

Q. 207. What is *Pblebotomy*, and with what Precautions do you perform it?

A. This is an artful and careful Opening made in some of the more conspicuous Veins by the common and well known Instrument a Lancet, (*Tab. III. fig. 1.*) chiefly in the Neck, Arm, Hand or Foot; being the most ancient, effectual and extensive Remedy upon most occasions with which we are acquainted, but requires Judgment in the Performance, to avoid the adjacent Nerves, Tendons or Arteries. To bleed in the Arm,
after

after providing a Fillet, Compress, and a bit of Cerate or Plaster, &c. I single out the Vein which presents best, and apply the Ligature moderately tight above the Elbow by two circular rounds about the Arm, and with a slip-knot (*Tab. II. fig. 4.*); then chusing out a Lancet either broad (*Tab. III. fig. 1.*) or spear-pointed (*ib. fig. 3.*) in proportion to the depth or rising of the Vein, place it betwixt my Teeth with the Blade removed from the Handle, so as to form an obtuse Angle, and in the mean time rub the Arm from the Hand upward, to make the Vein appear more conspicuous; and then pressing with my Finger to discover the Vicinity of the Artery, Nerve or Tendon, I make a small Impression with my Finger Nail upon the Skin where the Vein appears best for opening; I then place my left Thumb upon the Vein a little below the Impression to keep it steady, and taking the Lancet between my right Thumb and Fore-finger, resting upon the other Fingers almost as one would hold a Pen, I plunge the Point into the Vein, so as to make an Orifice tolerably large by an oblique Incision carried upward by raising a little the Point, which I then instantly withdraw, and press my left Thumb upon the Orifice, till the Receptacle is ready to receive the Blood, which if obstructed from flowing freely by too great Pressure of the Ligature

upon the Artery, I slacken it a little, and relax the Skin and Vein by bending the Arm in a small degree, which is then to be supported by a Stick, which the Patient should keep turning round. In this Operation one must observe, (1.) If there are many Cicatrices in the Skin from previous Bleedings, to open the Vein immediately below the last, if nothing forbids. (2.) That the Skin and the Vein be not distorted from their natural Situations in applying the Ligature, or by pressing the Thumb at the time of Incision; otherwise the Orifice of the Skin and that of the Vein will not correspond, which if it should happen, they are to be assisted by moving the Arm or Skin at discretion, or by enlarging the Orifice. (3.) That a tolerable large Orifice is always preferable to a small one, as the last, especially when the Incision is near a Valve, is commonly attended with a Thrombus or grumous Concretion, or else permits only the more fine and healthy Parts of the Blood to escape. (4.) That if the Vein lies deep, it must be opened by a Lancet with narrow Shoulders; but if it lies superficial, it may be better opened by a Lancet with a broad Blade, or an obtuse-angled Point; and though the first kind of Lancet, that is, the small or spear-pointed with a short Blade, always bleeds easiest in a skilful Hand, yet the broader kind is safest for
Begin-

Beginners, to avoid injuring the large Artery and brachial Nerve which lie under the basilic Vein, and the Tendon or its Aponeurosis of the biceps Muscle which lie under the Median.

Q. 208. How do you dress after the Operation of Bleeding?

A. After wiping off the Blood, and closing the Lips of the Orifice in their natural Posture, (as the Skin is apt to contract, and occasion the Fat to protrude, which leaves a troublesome Ulcuscle, or at best since it thus unites with a large Scar) I endeavour as much as possible to retain the Skin together with a bit of Diapalma Plaster, in the middle of which is fixed a bit of clean linnen sufficient to cover the Orifice; over this I apply a square Compress of sufficient thickness, and retain it by the Fillet of about an ell long, one end of which is applied obliquely across the Arm over the Compress, letting enough of it hang loose above the Elbow to tie in a knot, then the other part being carried round below the Elbow and up again, crossing the former upon the Compress, is carried round above the Elbow, and so on like a figure of 8, leaving enough to tie with the other end in a knot, on the outside of the Arm above the Elbow, as in *Tab. XIV. Fig. 1. D.*

Q. 209. When and how do you bleed in the Foot or Hand?

A. In the Hand there are two Veins, the Splenica running on the Back towards the little Finger, and the Cephalica betwixt the Thumb and Fore-finger, which in Children and in some grown People, where the other Veins are not conspicuous, may be opened to advantage. After having first bathed the Hand well in warm Water, and fixed a Ligature upon the Carpus, an Orifice is then made by the Lancet, as before directed; and if the Blood does not run freely, the Hand is to be kept in warm Water till a sufficient quantity is discharged. In the same manner also is the saphena and cephalic Vein in the Foot to be opened, after bathing it in warm Water, and tying the Garter tight about the Knee, or rather above the Ankle; but it may be safer, easier, and equally useful to open a Vein at the Ankle, or near the Calf or Ham, if the Veins appear there more conspicuous, dressing the Orifice as before (Q. 207.), and retaining the Compress by the Bandage described for a Luxation of the Ankle, *Tab. XIV. fig. 1. E.* Bleeding in the Foot is justly reckoned to make a greater Revulsion than that of the Arm in Disorders of the Head, Thorax, and abdominal Viscera, especially in a Suppression of the menstrual or hæmorrhoidal Flux.

Q. 210. When and how do you open the occipital or the jugular Vein in the Neck?

A. Here the Vein is to be first rendered turgid by a Neckcloth, or the common Ligature, drawn and held tight about the lower Part of the Neck by the Patient, or an Assistant; then pressing my Thumb upon the Vein which appears fairest, (on the disordered Side, if possible) I make an Orifice agreeable to what was before directed, applying a bit of Plaster compress, and a circular Bandage after the Operation is finished. Bleeding here is preferred for most Disorders of the Head, Brain, Eyes, &c. though it is not so commonly in practice as it deserves.— Sometimes a less considerable Vein is opened nearer the inflamed or disordered Part itself, as in those which run down on each side the Nose; in the Canthi majores or inner Corners of the Eyes, for an Ophthalmia; in the Veins under the Tongue, for a Quinsy; the Vena dorsalis penis, in a Priapism, &c.

Q. 211. What are the principal Accidents which may happen to an ignorant or careless Surgeon in the opening of a Vein?

A. They are, 1. An *Eccchymosis*, or Extravasation of the Blood from the Vein into the cellular Membrane betwixt the Flesh and Skin, either from the Vein being cut in two, or from a too early and violent Exercise of

the Arm before the Orifice is closed; in which Case, if a Discussion cannot be procured, it must be brought to Suppuration, as we directed before.

2. The Puncture of a *Nerve* or *Tendon*, which is instantly attended with most excruciating Pain, soon followed with an Inflammation and Swelling of the Limb, which often ends in Convulsions, a Gangrene, or Death, if not timely relieved: all which must be prevented, if possible, by repeated Bleedings in the other Arm, by cooling Purges and Clysters, with a diluent antiphlogistic Diet, and a Pultice of *Mica Panis in Lacte & Ol. Olivar. q. s.* applied warm over a Pledget of the *Baf. Flav.* on the Orifice, keeping the Arm a little bent in an easy Posture.

3. A Puncture or Wound of an *Artery*, which will plainly manifest itself by the Blood flying out by starts with great Impetuosity of a very florid Colour, and which will probably produce an Aneurism, or a Gangrene, and Death, if not timely remedied by the application of a bit of Lead, of a suitable shape, folded up in a piece of clean Linnen, and retained as a Compress on the Artery by a strict Bandage; or rather, a Compressure is to be made upon the Artery by the Instrument described in *Tab. VI. Fig. 1, 2.* After this a long Compress is to be secured upon the humeral

humeral Artery by a pretty strict spiral Bandage, to break off the Impetus of the Blood from the Part affected; and the rest of the Treatment may be conducted as for the Puncture of a Nerve or Tendon, by which means a true or spurious Aneurism, and their several Causes, may often be prevented.

Q. 212. But is not an Artery sometimes opened with Design?

A. Never but when it is small, and seated upon some resisting Bone, which will suffer it to be compressed so as to prevent an Aneurism, as in the temporal and other Arteries of the Pericranium.

Q. 213. When and how do you perform Arteriotomy in the Temples?

A. For most of the obstinate Disorders in the Head and Brain, which will not yield to other Remedies, and especially in Apoplexies and Epilepsies, &c. in which Cases, after inclining the Patient's Head opposite to the Light, I place my two foremost Fingers upon the Artery at a little distance from each other, and boldly make an Incision obliquely across it, by the strong double-edged Scalpel, *Tab. 1. fig. L.* without injuring the subjacent Aponurosis, and not fearing if the Artery should be totally divided, since any bad Consequences may be here prevented by
suit-

suitable Compress and Bandage. After the Artery is opened, which I know by the strong and salient Efflux of the Blood, I suffer the Patient to bleed twenty or thirty ounces more or less, and then apply three square Compresses, including in the first a bit of Lead or Emplaster rolled up tight, laying on the other two larger Compresses, and securing the whole by the knotted Bandage, *Tab. XIV. fig. 3.* which must be kept tight upon the Part for near a Fortnight, to prevent an Aneurism.

Q. 214. In what Parts, and how do you make *Issues*?

A. These are small artificial Ulcers, best made by pinching up the Skin and Fat betwixt the Thumb and Fore-finger, and dividing them with a Lancet so far as to be capable of admitting a large or small Pea, by which they are kept open and running for Disorders of the Head and Lungs, in which they frequently afford some Relief. The Places in which they are usually made for these Purposes are in the upper Part of the Head, or in the Neck over each Scapula; in the Arms near the Insertion of the deltoide Muscle; within-side the Thighs a little above the Knees, &c. but to produce any considerable Effect, there ought to be several Issues in these Parts, and their Discharge promoted

moted by an artificial Pea of Wax mixed with some strong digestive Substance, as *pulv. cantharid. gum. myrrh. & elm.* or by dressing the Pea with *ung. episp. &c.* But Issues are sometimes made by the Caustic, as mentioned before (Q. 24.), when the Patient will not admit of the Knife.

Q. 215. What is a *Seton*, and how do you make it?

A. This is a kind of double Issue made by pinching up the Skin and Fat either by the Pincers, or with the Fingers, *Tab. XV. fig. 56.* and then perforating them by a Lancet or the Seton Needle, armed with a skain of thread or silk, either loose or twisted together, and spread with some digestive Ointment, which being shifted or drawn through the Integuments a little every day, keeps them open and running as in an Issue; but as this is more troublesome, and of no greater use, we commonly prefer an Issue above each Shoulder, which will answer all the purposes of other Issues, for which they are made.

Q. 216. When and how do you *cup* and scarify?

A. This is rarely the Business of the Surgeon, except in the Country or at Sea, and in case of a Gangrene. It is distinguished into, (1.) *Dry Cupping*, when the Glass,
Tab.

Tab. X. fig. 1. being applied to the Skin, the Air is rarified by the Flame of a Spirit of Wine Lamp, which being withdrawn with great Celerity, the Glass is pressed close to the Skin, which is considerably raised and swelled into the Glass by the incumbent Pressure of the Atmosphere; so that thus an artificial Inflammation is raised in the same manner as by violent Frictions of the Skin, to derive the Blood and Humours towards and into the Part cupped, and to make a Revulsion of them from some other Parts affected. And these Purposes are more effectually answered, (2.) by *scarifying* at the same time, that is, by applying the Scarificator, *Tab. X. fig. 4.* with the sixteen Lancet Points to the Skin, into which they are suddenly struck by letting loose the Spring-handle *a*, by depressing the Button *b*; and then by applying the Cupping-glass as at first, a considerable quantity of Blood is drawn from the Incisions, so as to answer all the Purposes of bleeding in other parts when no Vein can be found, or when it would not be so safe to open a Vein, on account of the Patient's Lowness. Thus it may be applied with great success to the Occiput for Apoplexies, Head-achs, Disorder of the Brain and Eyes; and upon the affected Side in a Pleurisy, after Phlebotomy, it gives great Relief, as also in all local Inflammation, Pains, &c. But chirurgical Scarification

rification is commonly made by the Scalpel or Lancet in Gangrenes, Mortifications or Dropsies, to discharge the offending Humours, and make way for the topical Remedies to penetrate into the sounder Parts.

Q. 217. What is the Method of performing the Operation of Trepanning?

A. The Head being shaved, and the Patient seated in a low Chair, or lying in Bed with his Head held steady on the Bolster, and the Teguments removed as far as shall be judged necessary; the Trephine, see *Tab. III. Fig. 6.* (which is the Instrument used in *England*, and I would recommend) may be turned with the Pin in it to mark the Center of the Piece of Bone to be taken out, and fix the Point of Rotation till the Teeth of the Trephine have made such a circular Entrance in the Skull as will prevent the Saw from slipping; and this Circle should always comprehend some Part of the Fissure or Fracture if there is one; the Pin is then to be taken out for fear of its wounding the Brain before the Saw has got through the Skull, and the Operator continue to work through the Bone with a brisk and even Motion, cleaning the Teeth of the Saw as often as they are clogged with a Brush, and the circular Incision with a Probe or Tooth-pick; observing how far he has penetrated, and that if it be deeper
on

on one Side than the other, to make the Trephine in its future Rotation lean mostly on the Side where the Impression of the Saw is shallowest, in such manner as to contrive that the whole Circle shall be sawed through nearly at the same time. It has been said that we may proceed boldly, till we arrive at the Diploe, which we shall know by some bloody Appearances; but as sometimes the Diploe is wanting, and we cannot be too cautious to prevent such an Accident as wounding the Brain, it will be right to examine whether the Bone be loose after a little sawing, lest it might happen from the Thinness of the Skull before we are aware. Being quite saw'd through it will sometimes come out in the Crown of the Trephine, but if it does not, it must be taken out with the Forceps, *Tab. XVI. Fig. 6.* and if the lower Edges of the Bone are splinter'd they may be smooth'd with the Lenticular. In this Operation, though there is little or no Pain, yet Expedition is much recommended by Authors, and for that Reason the Trepan is preferr'd by some Operators, and particularly abroad. But the Trephine is undoubtedly the handiest Instrument, and least liable to the Accident of wounding the Brain by a sudden Penetration. Authors likewise differ about the Crown of the Trephine, whether it should be of a cylindrical or conical Form, but

but it seems to be universally allowed that the Crown should be larger in its Extent than they are usually made; and this is certainly a Matter of more Importance than the other, as there can be no essential Difference in the Convenience of either a cylindrical or conical Make, and therefore it may be left to every ones own Determination; but I would advise to have two of the same Size, that while one is cleaning the other may be used. The Perforation being made, if the Bone is depressed it is to be elevated, and if loose extracted, if the Extent of the Fracture requires it, or there are Appearances that denote an extensive Separation of the Dura Mater, an Extravasation of Blood coagulated, or Matter formed underneath the Cranium, as many Perforations must be made as shall be judged necessary, and as directed in §. 118 endeavouring always to avoid the Sutures if possible, and have a depending Orifice. All extraneous Bodies, Coagulum, Splinters of Bones, &c. being removed, the Dressings may be apply'd, and as the lighter they are the better, a small round Pledget of dry Lint next the Dura Mater of the Size of the Perforation, is to be applied first, which will be better than dipped in any spirituous Application; over which more dry Lint may be loosely spread to the Extent of the Wound of the Scalp without touching its Edges, and then

then a large Pledget spread with Digestive to cover the Whole, which is to be kept on with the Kerchief, *Tab. XIV. Fig. 2.*

After the Operation, whatever may be the Event, it is recommended to the Operator, to be as attentive to the Regimen, Quiet, and Regularity of the Patient as before, as without that, though the Operation may have done its Part, bad Symptoms if removed, may again return, and the Consequences be fatal. When it is like to succeed, the Symptoms abate, and by degrees go entirely off, the Patient is free from Fever, sleeps quietly, his Senses are restored, and his Faculties resume their former natural State; the Dura Mater by degrees digests and throws off a Slough, and is cover'd by a Granulation of new Flesh, the Discharge is moderate and of good Pus; the Perforation is filled up with the new firm Flesh rising from the Dura Mater, which growing over the Edges of the Perforation is joined by that which springs from the Cranium, and together make a firm Cicatrix. In order to prevent any Injury happening to this, it will be necessary for the Patient for a considerable time to wear over it a thin Plate of Silver or Tin.

Q. 218. How do you perform the Operation of couching or depressing the Cataract?

A.

A. The Propriety of the Operation being determined according to the Rules in Q. 147. The Patient is to be seated in a Chair of a suitable Height to that you sit in yourself, in a convenient Light, with a Pillow or two behind his Back, so placed that the Body bending forward his Head may approach near to you. The Head then being inclined a little backward leaning on the Breast of your Assistant, and held firmly, let the other Eye be cover'd so as to prevent its rolling, and your Assistant lift up the superior Eye-lid while you depress a little the inferior one. Then directing the Patient to turn his Eye toward the Nose, and holding the Needle nearly as you do a Pen, strike it through the Tunica Conjunctiva something less than one Tenth of an Inch from the Cornea, even with the Middle of the Pupil, and gently endeavour to depress the Cataract with the flat Surface of it. If after it is dislodged it rises again, though not with much Elasticity, it must again and again be pushed down. If it should have a slight Adhesion it must be first separated by the Needle before it is couched; if it is membranous, after the Discharge of the Fluid, the Pellicule must be more broke and depressed; if it is uniformly fluid, or exceedingly elastick, we must not continue to endanger a terrible Inflammation by a vain Attempt to succeed, but desist. If

A Cataract of the right Eye is to be couched, and the Surgeon cannot use his left Hand so dextrously as his right, he may place himself behind the Patient and use his right Hand. The *Sperutum Oculi* is not recommended here to be used, because upon the Discharge of the aqueous Humour through the Puncture, the Eye being somewhat emptied, more readily admits of the Depression of the chry-stalline Humour than when pressed by the Instruments. After the Operation is over the Eyes are to be both bound up (as *Tab. XIV. fig. 4.*) and it will be proper for the Patient to continue in an erect Posture some time, lest the Cataract, if he should lay down soon, should be apt to rise again. He is then to be bled, and an antiphlogistic Regimen ordered to prevent as much as possible Inflammation. The Body is to be kept open with gentle Purges, and if there is great Pain an Opiate may be administered. As to the Eye itself, cooling Collyriums may be made use of, but without Powders; and the Inflammation, if it should continue and encrease, must be treated as directed in *Q. 146.*

Q. 219. How do you perform the Operation of extracting the opaque Chrystalline?

A. This Operation was first performed by Monsieur *Daviel* in 1747, as he mentions in his Memoir on that Subject in the second

Volume

Volume of Memoirs of the Royal Academy of Surgery; though it appears to have been proposed by Monsieur Mery so long before as in 1707, in consequence of his being convinced that the Opacity of the chrystalline Humour was the real Cause of Cataracts. Mr *Daviel* has given in his Memoir a very accurate Description of his Method of performing this Operation, and says that out of 206 which he had performed the 6th of November 1752, 182 Operations had proved successful. He made use of seven or eight Instruments in his Method, according to his own Account, viz. 1. A pointed Needle, sharp-edged and semi-lunar, in shape of a Lancet to make the first Aperture; 2. a blunt Needle, sharp-edged, and also semi-lunar for enlarging the same Aperture; 3, 4. two Pair of crooked convex Scissars; 5. a small Spatula, a very little incurvated, for raising the Cornea; 6. another small-pointed Needle, sharp-edged on both Sides, for opening the Membrane that covers the Chrystalline on the fore Part; 7. a small Curette or Scoop to facilitate the Discharge of the Chrystalline, or to extract its Fragments; 8. a small Pair of Pincers for removing the Portions of the Membrane that might present themselves. All these, he says, must be ranged in order, and given to an Assistant, whose Business it will be to deliver them to the Operator as

Occasion requires.—It may be easily imagined that the use of such a Number of Instruments must make the Operation very complicated, and more tedious than one would wish in an Organ so delicate as the Eye, and so liable to Inflammations. Accordingly the *French* Surgeons themselves turned their Thoughts to improve on this Operation, by using fewer Instruments, and making the Process more simple; and Mess. *Le Faye* and *Poyet* both invented Instruments for that Purpose. Mr *Palucci*, Surgeon to their Imperial Majesties, likewise proposed doing it with a single Instrument; his Method I have not seen; the others, as well as that of Mr *Daviel*, are particularly described in the second and third Volumes of *Memoirs of the Royal Academy of Surgery*, but in my Opinion none of them are so practicable, easy, and expeditious as that of Mr *Sharp*, who in this, as well as in many other instances, has demonstrated that the Practice and Improvements of Surgery in *England* are inferior to none in any Part of the World; and to whose excellent Treatises and Example, its present State is in a great measure owing. I shall therefore in his own Words give the Description of his Method of performing this Operation, and that of cutting the Iris, with his Remarks; and conclude with some Observations

vations on the Degree of Reputation they both stand in at present in *England*.

“ Having chose as dark a Room as you
“ can well see to do the Operation in, that
“ the Pupil may by that means dilate, and
“ make a freer Opening for the Passage of
“ the *Cataract*; place the Patient before you
“ in the same way as for Couching, either
“ opening the Eye-lids with your Finger
“ and Thumb, or letting an Assistant raise
“ the Upper Eye-lid whilst you yourself
“ keep down the Under Eye-lid; and which
“ ever holds the Upper Eye-lid, must ob-
“ serve not to press against the Globe of the
“ Eye, but the Edge of the *Orbit*. Then
“ with a small Knife a little larger than an
“ Iris Knife, holding the Edge downwards,
“ make a Puncture through the *Cornea* near
“ the Circumference, into the *anterior Cham-*
“ *ber* of the Eye, in such a Direction as to
“ carry it horizontally, and opposite to the
“ tranverse Diameter of the Pupil: after
“ which, you are to pass it towards the Nose,
“ through the *Cornea*, from within outwards,
“ as near to its Circumference as in the first
“ Puncture.

“ When you have made the second Punc-
“ ture, push the Extremity of the Blade one
“ seventh of an Inch beyond the Surface of
“ the *Cornea*, and immediately cut the *Cornea*
“ down-

“ downwards, drawing the Knife a little to
 “ your Right Hand, as you make the Inci-
 “ sion: This Wound will be almost semi-
 “ lunar, and nearly parallel to the inferior
 “ half of the Circumference of the Pupil, so
 “ that the future Cicatrix will obstruct the
 “ Light but very little. *M. Daviel* recom-
 “ mends an Incision of nearly two thirds of
 “ the Circumference of the *Cornea*, but I
 “ believe what I mention will be found more
 “ commodious, as so large a Wound as he
 “ directs, is apt to give Issue to the Vitreous
 “ Humour.

“ I have here described the Operation as
 “ it is practised on the left Eye, but when
 “ you are to perform it on the right Eye,
 “ I would advise you to seat the Patient on
 “ the Ground, letting his Head fall back
 “ on your Knees, or against your Breast,
 “ which will give you the advantage of using
 “ your right Hand; whereas if you place
 “ him before you, it will be necessary to
 “ Operate with your left.

“ It sometimes happens that the Instant
 “ the Incision is made through the *Cornea*,
 “ the aqueous Humour, the Chrystalline,
 “ and some of the vitreous Humour fly out
 “ suddenly, when neither the Operator nor
 “ Assistant seem to press the Eye; so that
 “ one would suggest it might be owing to a
 “ Convulsive Contraction of the Muscles

“ sur-

“ surrounding the Globe of the Eye during
“ the Operation.

“ When this is the Case, the Surgeon
“ must instantly shut the Eye-lid to prevent
“ the total Evacuation of the vitreous Hu-
“ mour, and at the same time both he and
“ the Assistant cease to press upon the Eye-
“ lids: But if the Chrystalline does not im-
“ mediately rush out of the Eye, the Ope-
“ rator must press gently with one or two
“ Fingers against the inferior Part of the
“ Globe, till the Chrystalline advance through
“ the Pupil into the anterior Chamber, from
“ whence it will generally fall through the
“ Wound of the *Cornea* upon the Cheek.
“ However, should it not readily fall out of
“ the Eye, but remain lodged in the anterior
“ Chamber, I would advise the Operator
“ not to press the Eye in order to expel it,
“ but immediately to stick the Point of the
“ Knife into the Body of it, and extract it
“ contained in its Capsula.

“ This Process, I presume, will be found
“ of considerable Advantage, as it will in a
“ great Measure, remove the Danger of eva-
“ cuating the whole, or too much of the
“ vitreous Humour, which is apt to follow
“ the *Cataract*, when the Eye is forcibly
“ pressed; though it may be observed, that
“ contrary to Expectation, a large Quantity
“ of this Humour (perhaps a third Part or
“ more)

“ more) has been sometimes discharged,
 “ without any bad Consequence.

“ I have supposed, that the great Benefit
 “ arising from this Method, is the safe and
 “ easy separation of the ChrySTALLINE from
 “ the Bed of the vitreous Humour, so that
 “ the vitreous Humour shall be less exposed
 “ to be evacuated; but perhaps it will also
 “ be approved of, as it will always render un-
 “ necessary the Measure prescribed by M.
 “ *Daviel*, of wounding the *Membrane* of the
 “ *ChrySTALLINE* before we proceed to the Ex-
 “ traction of the *ChrySTALLINE* itself; to which
 “ purpose he advises the Flap of the *Cornea*
 “ to be suspended with a small *Spatula*, then,
 “ with a pointed cutting Needle, to wound
 “ the *Membrane* on the Surface of the *Chry-*
 “ *STALLINE*, after which, to introduce the same
 “ *Spatula* through the Pupil, in order to de-
 “ tach the Cataract from its Adherences,
 “ and then proceed to the Expulsion.”

It has been urged in favour of this Ope-
 ration, that in every Species of the Cataract
 it might be performed with Success, and that
 when the opaque ChrySTALLINE is extracted
 there is no danger of a Return of the Dis-
 ease, as there is from its rising again after it
 has been couched or depressed. But Mr *Sharp*
 himself, though once inclined to think it
 might

might when the Practice was become more familiar, prove a happy and useful Invention, says that he has met with a Cataract so soft as not to admit of Extraction by this Method, that it is necessary to be very exact in making the Incision of the Cornea of a proper length, neither too large nor too small; for in the first Case all the Humours are subject to be voided; and in the last, the aqueous and vitreous rush out and leave the ChrySTALLINE behind; and this is a Point of no small Difficulty. That seldom or ever the Patient escapes an Inflammation, which generally lasts six Weeks, and that the Iris in consequence has been so contracted in two Subjects as to leave no Passage for the Admission of Light. These Circumstances, and more Experience of their frequently occurring, has induced Mr *Sharp* in his last Edition in some measure to retract his former favourable Opinion; and he now seems to think this Operation will be entirely discarded, and the old Method of Couching resume its Place; which in some measure agrees with the Opinion of Mr *Gataker*, as mentioned Q. 147.

Q. 220. What are the Cases in which the making an artificial Pupil, by slitting the Iris, may be likely to be of Service, and the Manner of performing it?

A.

A. " There are two Cases where this
" Operation may be of some service, one
" when the Cataract is from its Adhesion
" immoveable, and the other when the Pu-
" pil of the Eye is totally clos'd up by a
" Disorder of the Muscular Fibres of the
" Iris, which gradually contracting the Ori-
" fice, at last leaves the Membrane quite
" imperforate. This last Distemper has
" hitherto been deemed incurable. The
" Adhesion of the Cataract I have spoke of
" in the preceding Chapter, and consider'd
" it as a Species of Blindness not to be re-
" lieved: But Mr Cheselden has invented a
" Method of making an artificial Pupil by
" flitting the Iris which may relieve in both
" the Instances here stated.

" In doing this Operation the Patient must
" be plac'd as for couching, and the Eye
" kept open and fixed by the *Speculum Oculi*,
" which is absolutely necessary here, for the
" very reason I would discard it in the other,
" since the Flaccidity of the Membrane from
" the Issue of the Aqueous Humour would
" take away its proper resistance to the Knife,
" and make it, instead of being cut through,
" tear from the *Ligamentum Ciliare*; then
" introducing the Knife in the same part of
" the *Conjunctiva* you wound in couching,
" insinuate it with its Blade held horizon-
" tally, and the Back of it towards you, be-
" tween

“ between the *Ligamentum Ciliare* and circum-
 “ ference of the *Iris*, into the anterior
 “ Chamber of the Eye, and after it is ad-
 “ vanc’d to the farther side of it, make your
 “ Incision quite thro’ the Membrane, and
 “ if the Operation succeeds, it will, upon
 “ wounding, fly open, and appear a large
 “ Orifice, though not so wide as it becomes
 “ afterwards.

“ The Place to be open’d in the *Iris* will
 “ be according to the nature of the Disease,
 “ if the Membrane itself be only affected
 “ with a Contraction, the middle part of it,
 “ which is the natural situation of the Pupil,
 “ must be cut; but if there be a Cataract,
 “ the Incision must be made above or below
 “ the Cataract, though I think it more eligi-
 “ ble to do it above.

“ The contracted *Iris*, from a Paralytick
 “ Disorder, is so often complicated with an
 “ Affection of the *Retina*, that the Success
 “ is very precarious in this Case. This O-
 “ peration, by what I have seen, has an-
 “ swer’d best in Adhesions of the Chrystal-
 “ line Humour, though to speak truly, but
 “ very seldom even there. As I would not
 “ mislead any one who shall practise an
 “ Operation, not yet much known in the
 “ World, I do confess that either the danger
 “ of the *Iris* separating from the *Ligamentum*
 “ *Ciliare*, or of the Wound not enlarging suffi-
 “ ciently

“ciently, do upon the whole make the
 “Event doubtful. I once perform’d it with
 “tolerable Success, and a few months after
 “the very Orifice I had made contracted,
 “and brought on Blindness again.

“Since it has been discovered, by the
 “Extraction of the Chrystalline, that a large
 “Wound may be made through the *Cornea*
 “without any bad Consequence. I should
 “imagine this Operation would be much
 “improved by introducing the Knife per-
 “pendicularly thro’ the *Cornea* and *Iris*, and
 “cutting both at the same time, so that the
 “Incision of the *Iris* should be exactly in
 “the same Part, and of the same Dimension
 “as by the other Method.”

From what Mr *Sharp* says of this Ope-
 ration, it were to be wished it was more suc-
 cessful, as it might relieve the Patient from the
 Consequences mention’d sometimes to happen
 in the extracting the chrystalline Humour in
 the preceding Question; future Opportuni-
 ties and Experiments may perhaps determine
 its Utility, which are certainly necessary, as
 Mr *Chefelden* speaks of it in these Words:

“This Operation I have performed several
 “times with good Success; indeed it can-
 “not fail when the Operation is well done,
 “and the Eye no otherwise diseased, which
 “is

"is more than can be said for couching a
"Cataract." *Chefelden's Anatomy*, VII Edit.

Q. 221. When and how do you perform
the Operation of the *Fistula Lachrymalis*?

A. The whole Process of the Treatment
of this Disease in its different States having
been already described in Q. 148. in which
is included the Time and Manner that it is
necessary to operate in; there remains no-
thing more to be done here, than to give
some Directions which may tend to the Fa-
cility and Certainty of its good Effects. And
as the whole of the Operation consists only
in opening the *Sacculus Lachrymalis*, and
afterwards, if necessary, perforating the *Os*
Unguis, the following Cautions and Direc-
tions may suffice.

When the Lachrymal Sack, from being
the temporary Receptacle of the pure Tears
in their Passage from the *Puncta Lachry-*
malia to the Nose, by the Obstruction of the
Ductus Nasalis, becomes inflamed, and de-
generates into an Abscess or Collection of pu-
rulent Matter; if it has not already burst, it
is necessary to lay it open through its whole
Extent, or at least as far as can be conve-
niently done; or if it has burst, the Orifice
must be dilated, as mentioned before, Q. 148.
In the first Case, when the Abscess is not
broke, to prevent the Discharge of its Con-
tents

tents through the Puncta Lachrymalia, and by that means make the Sack as full and turgid as possible; it will be proper to close the Eye-lid the Day before the Operation, and by means of little Slips of Plaster laid across one another on the Lids, from the Puncta Lachrymalia to the internal Angle, to compress their Channels and prevent the Flux of Matter that way, and thereby collect it in the Bag so as to point out the Place to make the Incision with the greater Certainty. To do this, the Patient being seated of a convenient Height for your Purpose, and his Head secured by an Assistant, with the small Incision Knife, *B. Tab. IV.* open the Sack from its upper Part down to the Edge of the Orbit, which must be done without regard to the Tendon of the Musculus Orbicularis, or fear of wounding the Blood-Vessels, tho' if you see the Vessels it is proper to shun them. This Incision should be about four Tenths of an Inch long, and in making it Care must be taken not to wound the posterior Part of the lachrymal Bag, for which Reason the small crooked Bistoury may be used by those who are doubtful of their using the small incision Knife mentioned above with sufficient Dexterity; as the crooked Bistoury, when introduced, cuts from within outwards, and consequently there is greater Certainty of avoiding wounding the posterior Part

Part of the lachrymal Bag. When there is an Orifice already made by the bursting of the Sack, the crooked Bistoury must be used to dilate the Bag, and it is to be treated afterward as directed, *Q. 148.* When this succeeds, and the Wound is healed, it will be proper to wear the compressing Instrument, *Tab. XVII. Fig. 10.* for a few Weeks, to prevent a Relapse. But where the Abscess has destroy'd the Lachrymal Sack, and the Bone is bare, it becomes necessary to perforate the Os Unguis, for the Performance of which some Directions have been already given, *Q. 148.* But without an exact Knowledge of the Situation of the Parts to be operated on, all Instructions will be of little Utility; however it will be proper to observe, that the Perforation is to be made in the anterior Part of the Os Unguis, which lies immediately behind the Lachrymal Sack, and that the Direction of the Trocar or Perforator, *A. Tab. IV.* should be so as to avoid injuring the Os Spongiosum Superius, or getting into the Ductus Nasalis, and therefore should be obliquely from the Angle of the Eye towards the Nose. As the Intention is to procure an artificial Passage for the Tears into the Nose the opening through the Os Unguis should be made sufficiently large by turning the Perforator freely about, as otherwise the Cavity, if small, may afterwards

con-

contract and render the Operation fruitless. It is afterwards to be dressed and treated as directed in *Q.* 148.

Q. 222. What is the Method of extracting the Polypus in the Nose?

A. The most usual Method, as before observed, *Q.* 152. is by the Forceps, *Fig. 6. Tab. X.* with a Slit at the Extremities for taking securer hold; and these are to be introduced into the Nostril about an inch and a half to make more sure of it towards the Roots, then twisting them from one side to the other, you must continue in that Action while you pull the Body of the Polypus very gradually. If it breaks, the Extraction is to be repeated as long as any remains, unless attended with a violent Hæmorrhage, which sometimes happens, especially when the Polypus is scirrhus. If this does not stop of itself, it may be restrained as directed, *Q.* 152. And if there are any remains, they are to be destroyed as mentioned there likewise.

Besides this Method there is another recommended by means of a Ligature, in order to avoid the Danger of a Hæmorrhage. Mr *Cbeselden*, in his Notes on *Le Dran*, has given a Description of one Manner of doing it with a Plate annexed, representing the Ligature twisted (not tied) round the Polypus. Mr *Leuret*, a French Surgeon, has likewise given

given a Representation and Description of his Manner of doing it, and where the Polypus adheres to the pituitary Membrane, so as to prevent the passing a Ligature round it, he separates it from the Membrane by a particular kind of Knife, and then ties it, he says, with great Facility, especially if the Velum Palati is cut. Both these Methods cannot well be explained so as to be understood without a Representation on a Plate, for which Reason I must refer you to their Books, where their Method is explained, and represented on Copper Plates.

Q 223. How do you perform the Operation for the Hare Lip?

A. This Operation consists in taking off the Skin from the Edges of the Fissure in an even Direction with a Pair of fine Scissars, and then the raw Parts are to be applied and retained together by passing through them one, two, or three Needles, (*Tab. X. fig. T and V.*) according to the length of the division. The Needles are inserted at about the distance of two tenths of an inch, or two lines from each other, beginning with the uppermost next the Nose, and their extremities or ends come out of the Lip at about the same distance from the Fissure. The Needles thus entered, and the Blood dried up with a
Q Sponge,

Sponge, there is next applied a waxed thread twisted round them like the figure *cc*, as in *Tab. I. fig. 8* and *9*. termed the twisted Suture. Thus the bleeding Lips being retained together, and the ends of the Needles cut off, or prevented from doing injury by a bit of Sponge or Emplaster laid under them; there may be next applied a Pledget of Lint dipped in *mel rosarum*, internally betwixt the Lip and Teeth; or omitting this, I use only a like Pledget dipped in *Basilic. flavum* applied externally, over that some dry Lint, and a Compress, secured by the Sling with four Heads, as in *Tab. XIV. fig. 5*. Thus the Dressings are to be left until the fourth day after the Operation, when the middle Needles may be extracted, continuing to dress as before, until the Lips being conjoined, in about a fortnight's time, the threads are to be cut, the Pins extracted, and the Cure is compleated, as in other superficial Wounds. The Pins should be made three fourths of their Lengths of Silver, and the other Part towards the Point of Steel. And to withdraw them easily, it will be proper to moisten them for two or three Days with Oil, and dab the Ligatures with warm Water.

Q. 224. When and how do you extirpate scirrhus Tonsils?

A.

A. If these Glands are so much enlarged and indurated as to form an irresolvable Scirrhus, threatening worse Consequences and a Suffocation; I then proceed to remove them by Extirpation, rather with the Ligature than by Incision, because the former Method is commonly attended with a very profuse, or even sometimes a fatal Hemorrhage. The best Method of applying the Ligature for this purpose seems to be that of Mr Cheselden, namely, to perforate the bottom of the Tonfil by the Needle armed with a double strong thread, (*E. Tab. IV.*) and when the Ligature appears through the Gland, it may be drawn up to the Mouth by a Hook, then divided and the Needle extracted, leaving the two threads still in the Gland with their four Extremities coming out at the Mouth. This done, each of the threads may be tied, by means of the iron instrument *D. Tab. IV.* so as to compress each of them one half of the Gland, the one above and the other below; the knots must be double, and the Ligature cut off pretty near them, by which means a separation will be made in two or three days if the Ligatures continue tight, otherwise the Operation must be repeated to make a greater Stricture. But if the Basis is small, there is no occasion for the Needle with the double Ligature, one being suffi-

cient; which is to be carried round with the bent Probe, C. *Tab.* IV. and tied in the same manner as the other. It is worthy Observation, and must give Encouragement to practise this Operation, it carries with it no Danger, Terror, nor Difficulty, and is remarkably successful in the Event, these Tumors being once extirpated, contrary to others of a scirrhus nature, rarely or ever being attended with the Disease falling on another Part, or any other Prejudice to the Patient's Health.

Q. 225. How do you perform the Operation for the wry Neck?

A. " The Operation of cutting the Wry Neck is very uncommon, and is never to be practised but when the Disorder is owing to a Contraction of the *Mastoidæus* Muscle only, as it can answer no purpose to set that Muscle free, by dividing it, which is all that is to be done, if the others in the Neck are in the same state, and more especially if it has been of long standing from Infancy, because the growth of the *Vertebræ* will have been determined in that Direction, and make it impossible to set the Head upright.

" When the Case is fair, the Operation is this. Having laid your Patient on a Table,

“ ble, make a transverse Incision through the
“ Skin and Fat, something broader than the
“ Muscle, and not above half an inch
“ from the *Clavicle*; then passing the pro-
“ bed Razor with care underneath the Mus-
“ cle, draw it out and cut the Muscle. The
“ great Vessels of the Neck lie underneath,
“ but I think, when we are aware of their
“ situation, the danger of wounding them
“ may be avoided. After the Incision is
“ made, the Wound is to be cramm’d with
“ dry Lint, and always dress’d so as to pre-
“ vent the Extremities of the Muscle from
“ re-uniting; to which end they are to be
“ separated from each other as much as
“ possible, by the assistance of a supporting
“ Bandage for the Head, during the whole
“ time of the Cure, which will generally
“ be about a Month.”

Mr *Cbeselden* recommends the Division to be made in the tendinous Part of the Muscle, observing that the thin Part will be capable of stretching after the Operation. When this Disorder is complicated by a Contraction of the other Muscles, and a Crookedness of the Spine, the Swing, *Fig. 13. Tab. XVI.* may be used.

Q. 226. How and when do you perform the Operation of Bronchotomy?

Q 3

A.

A. This is a sort of Paracentesis of the Wind-pipe, made to give a free Communication of the Air into the Lungs, when the Trachea or Larynx is compressed or obstructed in a Quinsy, to prevent Suffocation, or to inflate Air into the Lungs of a Person lately suffocated to recover him; but for want of more numerous Precedents, the Operation, though safe, is rarely performed. It consists in making a longitudinal Incision of about an inch in extent through the Integuments, and as much below the scutiform Cartilage; and after freeing the Integuments and Muscles from the Wind-pipe, drying up the Blood with a sponge, and keeping the Parts asunder with the fingers, I make a small transverse Incision betwixt the cartilaginous Rings, and then introduce a silver or leaden Canula, not perfectly round but depressed, of near an inch in length, and furnished with a couple of rings like handles at the top, to prevent it from slipping in, and to secure it by a Ligature round the Neck. If the Canula is found too long, it may be shortened relatively by passing it through one or more Compresses of Emplaster perforated before it is introduced; besides which, it will be likewise proper to have a second Tube to fit within the former, that it may be taken out and cleansed occasionally, if it should be obstructed by mucus or moisture. Thus Suffocation

focation may be prevented, till the Inflammation and Swelling can be removed by bleeding and proper Medicines; after which the Canula being removed the Parts will readily close, and the Wound heal in a few days time, only by dressing with the common Digestives. Some adapt a triangular Bodkin to the Canula, and introduce it like the Trocar without any previous Incision. This Operation is easy and safe to perform, and therefore tho' its Utility and Success may be doubtful, in the Cases it is recommended in, yet the Trial where the Patient is willing should by no means be discouraged, since in desperate Cases if one succeeds out of a great many, and the Operation is harmless, it certainly will be worth attempting.

Q. 227. How do you extirpate scirrhus and cancerous Breasts?

A. When the Case appears favourable for an Attempt to cure the Patient by the Operation, as mentioned in Q. 44. it is to be performed in the following manner. The Patient being placed in a Chair of a suitable Height, and properly supported; you are to make a longitudinal Incision (if the Tumor is small) and dissect it out; if the Tumor is large, an oval Piece of Skin is to be cut thro' first, of a Size in proportion to the Tumor, and to be left on, by means of which the

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Scirrhus may be elevated and dissected clean out. If the whole Breast is to be taken off, you are to preserve as much sound Skin as possible by the same Method, which will lessen the Wound greatly, and the Basis of the Breast is to be carefully clear'd from the Pectoral Muscle; and every tumified Gland or Knot is likewise to be dissected out if possible, as there can be no Dependence on their lessening or disappearing by means of the Discharge. All the large Arteries are afterwards to be tied, by passing a Needle and Ligature twice through the Flesh, almost round the Vessel, which will comprehend it in the Ligature. The smaller Vessels may be stopped by the Application of dry Lint, with which the Wound is to be filled, and a Pledget of soft Digestive placed over the Whole, with Compresses of soft old Linen secured by a Roller of six Ells long, double-headed, and about a Hand's Breadth, applied with its middle under the sound Axilla, A. *Tab. XV. fig. 1.* and crossing the Roller-heads at B. they are carried obliquely across the Breast and Back to the other Axilla D. where being crossed again, and drawn tight upon the Compress and Dressings of the Breast E, F. are again carried up to B, and so repeated, till when the Bandage is near spent, you terminate it circularly round the Thorax on the Dressings in the Direction A, D.

A, D. Every thing being secured and finished, the Patient may be put to Bed, and according to what Blood has been lost in the Operation, and the Strength of the Patient, it may be necessary or not to bleed; and if the Pain should be severe, an Opiate may be administer'd; afterwards it will be proper, during the Cure, to keep the Patient's Body open by laxative Medicines; and such a Regimen must be observed, both in Medicine and Diet, as will best secure her from a Relapse. In the Neck, there are frequently another Species of scirrhus Tumours or Glands, which when moveable, free from Pain, and attended with a good Habit of Body, may be dissected out with Care, and will heal easily, and if they extend up to the Chin towards the Mouth so as to occasion a Division of the Salival Duct in operating, when the Wound will not heal by other Methods, it may be cured by making a Perforation into the Mouth where the Cheek is wounded, which being kept open some time by a Tent or Seton till the internal orifice becomes fistulous, the external Wound may be easily heal'd, and the Saliva will discharge into the Mouth.

Q. 228. How do you perform the Operation for the *Empyema*?

A. When it is necessary to perform this Opera-

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Operation, as represented, *Q.* 156. it may be done in the following manner, being the Method recommended by Mr *Sharp*, and differs from that described in *Q.* 132. in the Place where the Incision is to be made; for he advises it to be between the 6th and 7th Rib, half way from the Sternum, towards the Spine, and to be made with two Knives, *viz.* the external Wound, about an Inch long, through the Skin, with a common incision Knife, as also the Puncture, through the subjacent Muscles; this Puncture is afterwards to be dilated with the blunt pointed Knife, *Fig. A. Tab. I.* to the Extent of half an Inch, which when the Patient lies down will become as depending an Orifice as the other, *Q.* 156. in sitting up; and by this manner we shun all the Inconveniencies in the other, as the Danger of wounding the intercostal Artery; or in avoiding that, by cutting close to one of the Ribs, the hazard of the Bone growing carious, by the Pressure of the Tent employed afterwards; besides, the Diaphragm possibly being affected by the Inflammation of the Wound, which might prove of very ill Consequence. Lastly, in fat People it is difficult to count the Ribs, and the Wound will be deep and troublesome to make. After the Fluid is all discharged, or as much as can be with safety to the Patient, a short flat Tent of soft Linen may

may be introduced for the first Dressing, secured so as not to slip into the Cavity, and afterwards the Canula mark'd F. *Tab. IV.* is to be continued till such time as the Discharge is so lessened that the Wound may be cicatrized with Safety.

Q. 220. How do you perform the Operation of the Aneurism in the Arm?

A. For an Aneurism in the Arm, the Tournequet is first applied above in the Humerus, tightening it till no Pulsation is perceived in the Artery at the Carpus; after which a longitudinal Incision is to be made on the inside of the Biceps Musc. above and below the Aneurism, that the Artery may be freed from the Nerve and exposed to view; which being made, the coagulated Blood is to be all removed, that the Orifice may be discover'd; if it does not readily appear, the Tournequet is to be loosen'd, which giving issue to the Blood will shew where it is. A flat and pretty broad Ligature in a crooked Needle is then to be pass'd under the Artery, just above the Orifice, and tied, and afterwards another Ligature is to be made in the same manner below the Orifice, leaving the Space between them to slough away. It is recommended to clear the Artery from the Nerve, and hold it up by a Hook to tie it without including the Nerve; but if the
Nerve

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Nerve should be included, it is the Opinion of experienced Surgeons, that it will not be attended with any dangerous Consequences; after the Operation the Wound is to be dressed with dry Lint, and a soft Pledget of Digestive over it; the Arm to be laid easy on a Pillow in Bed, and kept in that Posture till the Wound is near incarned. If the Wound is attended with Pain, Inflammation, &c. the antiphlogistic Treatment is to be followed, and the Digestion promoted by the usual Applications for that Purpose. This is the proper Method for operating in the Aneurism happening from Puncture of the Artery externally; and the same may be followed in a spurious Aneurism. After making an Incision through the Integuments, and discharging the extravasated Blood, whence the Arm is often saved from an Amputation, or from a spreading Gangrene, which would in time be fatal. In this manner also, with little Variation, are to be treated Aneurisms in other Parts of the Body, where the Arteries are accessible, as behind the Ears, in the Hands, Legs and Feet, &c.

Q. 230. In what Case is the Amputation of a Limb necessary?

A. Amputation of a Limb is necessary where a compleat Mortification has destroyed all the Muscles, Vessels, Nerves, &c. but
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it is not to be performed according to the Rules of the best modern Practice until the Mortification is not only stopped, but the Separation of the mortified Parts from the living advanced so as to make it probable that there will be no Relapse after the Operation, from the Seeds or Cause remaining in the Blood. It is also necessary in Cases where the Bones of the Articulations are carious from White Swellings, &c. Where they are shatter'd either by Gunshot Wounds, Fractures, and in some Cases where the other Parts of the Limb are so torn or fractured, that there is no likelihood of saving the Limb by a happy Re-union of the wounded Parts. And in these Cases it is right to proceed as soon possible to the Operation before the Fever, Inflammation, &c. come on, otherwise the Patient may either totally sink under them, or be so exhausted as to make it very hazardous, and his Recovery very doubtful.

Q. 231. How do you amputate a Finger or Toe?

A. The best Method is to separate it in the next sound Joint with the Knife, D. Tab. I. drawing up and leaving a sufficient Portion of the Skin to cover the Stump, and expedite the Cure; as by this means one is sure to avoid a supervening Caries, or a splintering

tering of the Bone, to which the former Methods are liable. After Amputation I dress with scraped Lint. The Hemorrhage will frequently cease by the Application of dry Lint; but if it should prove excessive, you must tie the Vessel, and afterwards dress with some Digestive spread on a Pledget of soft Lint, retained by a sticking Plaster and Compress cut in shape of a *Malta Cross*, or else with two long Slips of Plaster laid across each other over the Stump, then a Compress and a circular Bandage.

Q. 232. How do you *amputate* the Hand?

A. This I amputate at least one or two finger's breadth above the Mortification or Caries, never in the Joint itself in these larger Amputations, because of the difficulty of healing the Stump. Having therefore marked the Place, and disposed my Apparatus in order, I place three Assistants round the Patient, as in *Tab. XII. Fig. 1.* ordering the Assistant *d* to draw up the Skin tight, and then proceed to apply a Slip of Linen about an ell long circularly round the Limb, the better to guide the Incision, which I next proceed to make (having first secured the Artery in the Arm above by the Tourniquet, *Tab. XIV. fig. 1. K.* which is to be taken care of by the Assistant *d*) with the Amputation Knife. Having divided the Skin, I order the Assistant

Assistant *d* to draw it up as much as possible, and then proceed to cut through the Flesh to the Bones circularly, and close to the edge of the retracted Skin, and then I divide the intermediate Flesh and Ligament betwixt the Bones by the Catlin, *Tab. O. fig. 3.* with which I also separate the Periosteum a little both from the Radius and Ulna, to prevent its being lacerated by the Teeth of the Saw, *Tab. O. fig. 4.* which I next apply on the outer side of the Arm, as in *Tab. XII. fig. 1. b.* ordering the Assistant *d* at the same time to draw up the Flesh as much as possible, to open a Passage to the Bones, that they may be cut off a little higher than the Incision, and that the Flesh may afterwards wrap over them; to do which the more effectually, the Flesh may be drawn up from the Bones by a piece of Linen with a slit in it, the two ends of which may be pulled up the Assistant *d*; and thus the Flesh and Skin being longer than the Bone, and folding over the Stump, will greatly hasten the Cure. I now continue to work the Saw upon both Bones after they have been gently entered by the Teeth, with which I cut through them as speedily as possible, being careful to have both Bones divided at the same time without splintering them. The Limb being thus off, I order the Assistant *d* to relax a little the Tourniquet, that by the starting forth of the Blood I may dis-

discover the Ends of the Arteries, which I then secure by Ligature with a crooked Needle and waxed thread, which should be pretty broad to prevent it from cutting thro' the Coats of the Artery, which I thus intercept, together with the circumjacent muscular Flesh, by passing the Needle twice round, and securing the Ligature by the Surgeon's Knot. In the next place I apply to the end of the Stump dry Lint, observing to lay it on unequally, according to the Situation of the Parts; thickest upon the Vessels which discharge most. The Skin is then to be drawn over the Stump, and retained by a circular Slip of Plaster, or Pledget of Tow spread with Digestive; then a large Pledget of Digestive applied over the end of the Stump, over that a light soft Compress of Tow, two Slips of Cloth across the Stump at right Angles, secured by a Roller rolled lightly round the Arm, and over all a woollen Cap, also secured with a Roller. Then the Patient is bled, if necessary, and disposed to rest; and if the Dressings sit easy, they are not to be removed before the third or fourth day, unless severe Pain, Inflammation, Hæmorrhage, &c. should make it necessary; nor even then should the Portions of Lint be taken off, unless they are in a manner ready to drop off spontaneously without any Adhesion; absorbing the Matter by the gentle application of
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of dry Lint, and not by a rough wiping the Surface. The next Dressing should be made with warm Digestive, and secured in the same manner as the first, having always a strict Attention to making the Bandage easy: The Patient must at this time, and while the Cure is advancing, for a considerable time observe a strict Regimen, and in a few Days after the Amputation the Digestion will be greatly facilitated, by taking the *Cortex Peruvian.* with *Elix. Vitriol.* as directed Q. 107. of Gunshot Wounds; if it purges the Patient, at first it need not be regarded, but if the Purging continues, it may be restrained by giving a few Drops of *Laud. Liquid.* with each Dose of the Cortex, and leaving off the *Elix. Vitriol.* Previous to the Exhibition of the Cortex, it will be proper to give a Dose of *Pulv. Rhei*, which must be in Proportion to the Patient's Strength and Constitution.

Q. 233. How do you amputate the *Humerus* above the Elbow?

A. Much in the same manner, and with the same Precautions as in the Cubitus, only with greater Circumspection and Care afterwards, as this is attended with more Danger; and observing here, as before (Q. 191.) to save as much of the Limb as possible.

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Q. 234.

Q. 234. When and how do you amputate the Arm in its Articulation with the Scapula?

A. This is never performed but when a Mortification has extended to the Joint, or when the Head of the Humerus is shattered or carious; and the Instances thereof are very rare in Practice. When it is necessary to be done, the following Method is laid down by Mr Sharp.

“ The Patient being laid on his Back,
 “ with his Shoulder over the Edge of the
 “ Table, make an Incision through the
 “ *Membrana Adiposa*, from the Shoulder a-
 “ cross the Pectoral Muscle, down to the
 “ Armpit; and in order to save as much
 “ Skin as possible, begin it about two Inches
 “ below the Joint; then turning the Knife
 “ with its Edge upwards, divide that Mus-
 “ cle, and part of the *Deltoid*, all which
 “ may be done without danger of wounding
 “ the great Vessels, which will become ex-
 “ posed by these Openings; if they be not,
 “ cut still more of the *Deltoid* Muscle, and
 “ carry the Arm backward: Then with a
 “ strong Ligature, having tied the Artery
 “ and Vein, carefully divide those Vessels at
 “ a considerable distance below the Ligature,
 “ and pursue the circular Incision through
 “ the Joint, cutting first into that Part of the
 “ Bursal

“ Bursal Ligament which is nearest to the
“ *Axilla* : for if you attempt to make way
“ into the Joint, on the upper part of the
“ Shoulder, the Projection of the *Processus*
“ *Acromion* and *Processus Coracoideus*, will
“ very much embarrass, if not baffle the
“ Operation. After the Amputation, the
“ Cross-stitch may be practised here with
“ great Benefit.”

Q. 235. How do you amputate the Foot?

A. Here, contrary to an Amputation of the Cubitus, the Leg must be taken off a little below the Knee, even though the Disorder extends no farther than the Foot, to avoid a long and useless Stump, which can be only an Incumbrance and Deformity to the Patient ; whereas the Cubitus is to be amputated as low as possible, since the Stump may be useful upon many occasions, and may be better adapted to an artificial Hand ; but after a loss of the Foot, a long Stump cannot be commodiously adapted to a wooden Leg, which must be fastened to the Knee. I proceed in the Amputation in the same manner as before-mentioned in the Cubitus, applying the Tourniquet first to the Thigh, in the manner represented *Fig. 1.* and 6. *Tab. XIII.* finishing the Operation as before (Q. 191.) by standing within-side the Leg, *Tab. XIII.*

fig. 1. b. It sometimes happens that the Bones of the Toes, and part of the Foot, only want to be amputated, in that case a small Spring-saw will divide the Bones, and Care must be taken to incise the Skin so as to preserve as much as possible of it, as in Amputations of the Fingers and Toes at their Articulation.

Q. 236. How do you amputate the Thigh?

A. This must be done within two Fingers breadth of the Patella, or else as low as possible, being very careful to give the Artery a due Compressure by the Screw Tourniquet, or by that made with a Ligature and the Turnstick, as represented, *Fig. 1. L. M. Tab. XIV.* For as the femoral Artery is extremely large, an Error in this Respect may occasion a fatal Hæmorrhage in a minute's time. After the Amputation, as before directed, the femoral Artery is to be well secured by a Ligature, without intercepting the Nerve; and Ligatures must be likewise made upon the other smaller Arteries, which bleed considerably: the Quantity of Lint here applied must be greater than in other Amputations, the other Dressings must be proportionably larger, and a long Compress must be secured by the Bandage upon the crural Artery by a Roller carried down the Thigh; and the Dressings are to be retained
either

either by the capelline Bandage, or the Hands of an Assistant upon the end of the Stump; observing to treat the Patient with a proper Regimen and Medicines, as in other great Wounds. The profuse Discharge of Matter which is often made from the Stump, greatly reduces, and often destroys a weak Patient; but this may be in a great measure remedied by a proper use of the Bark internally, accompanied with Opiates given according to the Strength of the Patient.

I cannot close this article of Amputations, without taking notice, that lately it has been the Practice of one of the most ingenious Surgeons in *London* to separate the Nerve from the Artery after Amputations, and only inclose the Artery within the Ligature; intending by this Method to avoid the Accidents that are imagined to happen in consequence of tying the Nerve with the Artery, and also hasten the Separation of the Ligature. As this is a Point of great Importance in Surgery, and debated with strong Arguments by others of the Profession, who differ from him in opinion, particularly in *Pou-teau's Melanges de Chirurgie*, p. 316. and following, printed at *Lyons* 1760. it must be left to future Experiments to decide this Controversy. The same Gentleman like-

wife has introduced the Amputation of the Foot only, and preserving the rest of the Limb, where the Disease extends no farther than the Ankle; and has invented a Piece of Mechanism, by which means the Patient as he says, can walk. If it succeeds it will be one of the most useful Improvements that has been made in Surgery for many Years, be of great Service to Mankind, do Honour to the Practice of Surgery in *England*, and consequently to the Inventor.

Mr *Sharp* likewise has revived and recommended the use of the Cross-stitch in Amputations of the Thigh, in his last Edition of his *Operations in Surgery*, but it has not met with universal Approbation, as being thought not of the least Utility.

I shall conclude with this Observation, that after Amputations, bleeding, (if the Patient has not lost a great deal in the Operation, or is very weak) the Administration of Opiates and the Bark, as recommended by Mr *Ranby*, in his *Treatise of Gun-shot Wounds*, has been attended with the greatest Success, in some Cases where the Patient has been in the utmost Danger; and hardly ever fails to be of great Benefit where it is used with Propriety.

Q. 237. When and how do you perform the *Paracentesis* of the Abdomen?

A. This is performed in that species of the Dropsy called *Ascites*; for if the Water be contained in the cellular Membrane, or in *Hydatides*, it cannot be thus evacuated; and even at best it only gives a respite to the disorder for a time. If then the Water appears to be extravasated by its Fluctuation and Sense to the Touch, and the Urgency of the Symptoms renders the Operation necessary, the Patient being seated conveniently in a Chair, must press both his hands upon the upper part of the Abdomen, and then having oiled the Trochar, I stab it suddenly through the Integuments, without danger of wounding the Intestines, which are removed to a considerable distance from the Peritonæum by the included Water. The Part most convenient for this, is about three fingers breadth below the Navel on the left side of the Abdomen; but sometimes when the Navel protuberates, it may be punctured by the Lancet, and the Waters that way discharged without danger of a Rupture following. If the end of the Canula is obstructed by a part of the Intestine or Omentum during the discharge of the Water, I clear it by the Probe, observing to keep a due pressure upon the Abdomen by the hands of an Assistant, as the Water is discharged, lest the Patient should

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faint;

faint; and for the same purpose the like Compressure must be continued after the Operation, by rolling the Abdomen tight, after a Flannel has been applied dipped in spirit of Wine, so as to keep the Intestines up against the Diaphragm for three or four days, till the Parts have recovered their due Tone. The Dressing may be made with dry Lint, and a Plaster that will adhere firmly. Thus the Patient's Life may be protracted for many years free from uneasiness, though the Disorder, it must be confessed, is very rarely thus cured. By continuing a Pressure upon the Abdomen, we are enabled to draw off the whole quantity of Water at once, which formerly they did not attempt for fear of the Patient's fainting. I once knew an astringent Injection with diluted Spirit of Wine injected after the Operation with Success, the Patient afterwards recovering; and this Practice seems advisable whenever the Dropsy arises from a Rupture, or too great a Dilatation of the Lymphatics, as the exhaling Vessels will by that means be contracted.

Q. 238. How do you perform the Operation of the *Bubonocoele*?

A. The Parts being shaved, let the Patient be laid on a Table about three Foot four Inches high, cover'd with a Blanket, his Legs hanging down; then being properly secured by

by the Assistants, I begin my Incision with a strait dissecting Knife, an Inch above the Place where the Intestine passes out from the Belly, and continue it through the Skin and Membrana adiposa, quite down to the lower part of the Scrotum. The Membrana adiposa is then to be separated from the Peritonæum or Sack of the Hernia; this being laid bare you are to cut through it with the same Knife very carefully about an Inch and an half below the Stricture; the first Orifice should not be larger than to admit a Probe, which being tried to be introduced, will shew whether the Sack is cut through or not; if it meets with no Resistance, you may be sure the Wound has penetrated, and then it may be enlarged so as to admit the fore Finger; upon this, and by its Direction, the Incision must be continued with a narrow-bladed crooked Knife blunt-pointed, so as to divide the Sack from the upper Part at the opening in the abdominal Ring, down to the Bottom of the Scrotum. If any Hæmorrhage happens, that, is to be stopp'd by tying such Vessels as may require it, and then the Operation is to be prosecuted according as we find the Viscera. Upon the first opening of the Sack, a Fluid generally rushes out, different at times in its Colour, Quantity and Consistence; and this Fluid has been esteem'd a Security against the Danger of wounding

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ing the Intestine, but is not to be depended upon, and therefore the Operator is to proceed with the utmost Caution as before directed; when the confined Viscera are exposed, if there is a Portion of the Omentum mortified, it should be carefully cut off, a little below the sound Part, (spreading it out first) with a Pair of Scissars; if there is a Portion of Intestine in it (as sometimes there is) by this Method I avoid wounding it; I then try whether by gently drawing out a little more Intestine I can reduce its Bulk, so as to return it without dividing the Tendon. But this must be done with very little Force, and not continued long; if it does not succeed, I then divide the Tendon of the Obliquus descendens Muscle (commonly called the abdominal Rings) with the same crooked blunt-pointed Knife on the fore Finger, keeping down the Intestine from being injured. And this Division should be about an Inch long, and made in a Direction obliquely upward, and not transverse. The hernial Sack and Stricture being now divided, whatever the contained Parts are, are to be returned, and if there are any Adhesions they must be separated by the Fingers if slight, otherwise by the Knife, unless the Adhesion is of one part of the Intestine to another, and then it had better be returned without separating. In returning the Intestine, I replace
that

that part first which came out last, and if there is any Omentum in a proper State, that should be put in first of all; and it will facilitate the Return of the Parts if the Leg and Thigh of the ruptured side are a little elevated. When the Intestine is gangrened only in a small Spot, it should be connected in the upper part to the Wound by a strong Ligature; and this will prevent the Fæces being discharged into the Belly when the gangren'd Parts slough off, and in time probably the Orifice may contract and heal firmly; but whether it should or not, it is necessary to pursue this Method. In making this Connection, the Gut is not to be wounded, but the Needle is to pass through the Mesentery at a small Distance from the Intestine, and as much hold taken as will be likely to make the Stitches not give way till the Attachment is formed. If there is such a Quantity of Intestine mortified as to require being cut off, I afterwards join the Extremities (making them lap over a little) by the interrupted Suture, and fasten them with a Stitch or more to the upper part of the Wound, that in case they should not unite, there may be an Exit for the Fæces through the Groin. If the Space of Intestine mortified is so considerable as not to admit of any Possibility of a Union, I then endeavour to connect both Ends to the upper part of the Wound,

Wound, by means of a strong Suture thro' the Mesentery, and do it so as to keep the Mouth of the Gut open and free as possible. After the Reduction of the Intestine and Omentum, the hernial Sack comes into Consideration, and if this is large, thick and hard, a proportionable part, according to its size, is to be removed, which will facilitate the Cure. The Dressings after this Operation I make as easy and light as possible, consisting only of soft dry Lint, with a Pledget of Digestive over it. And the Patient must observe the strictest Regimen in Diet, and the most perfect Quietude both in Body and Mind. The Body is to be kept lax, the symptomatick Fever curbed, and Ease procured by proper Medicines, and afterwards Nature will perhaps successfully finish the Endeavours of Art to assist her. The Operation for the Bubonocoele in Women is performed nearly in the same manner, as also that for the femoral Hernia.

Q. 239. How do you perform the Operation for the *Exomphalos*?

A. I make a small opening through the Skin and Sack with Caution, and introducing my Director or Finger, I cut out a circular Piece of Skin and Sack large enough to expose the Viscera, either with a Knife or Probe Scissars, which pressing down the Intestine,
I dilate

I dilate the Orifice about half an Inch or more on the left side, a little obliquely upwards; the remaining part of the Operation is to be pursued in the same manner as already described. After all these Operations, when the external Wound is quite healed, it will be proper to wear a Truss.

Q. 240. How do you perform the Operation necessary for the radical Cure of the *Hydrocele*?

A. The Hair being shaved off, let the Patient be laid on a Table, and being properly secured, let your Assistant grasp the Tumor, to make it as tense as possible; then make a Puncture or small Incision with an imposthume Lancet, through the Scrotum and Tunica Vaginalis at once, large enough to admit the end of the fore Finger, which must be immediately introduced, otherwise the vaginal Coat will collapse. On this Finger he should introduce the Incision Knife, and divide the Tumor through the Tunica Vaginalis and Scrotum its whole length. If the Testicle should appear rotten or wasted, it must be extirpated; but if it is sound, and the Tunica Vaginalis not much thicken'd, nothing more need be done than to replace the Testicle gently if it has thrust itself out, and fill the Wound with very soft dry Lint, which must be laid very lightly in, and covered

covered with a Pledget of Digestive, soft Bolsters of Tow, and the Scrotum put into a Bag-truss. If the Tunica Vaginalis is much thicken'd and hard, and the Tumor large, it will be necessary to cut off a small part on each side of the Incision.—The Patient being put to bed, let him be bled to as considerable a Quantity as his Age and Constitution can bear, and an Opiate administer'd and repeated as the Case may require. In about twelve Hours after the Operation, apply a warm Emollient Pultice spread thick, and on the next Day let the Parts be fomented, and the Pultice renewed at least twice, the Edges of the Wound cover'd with soft Digestive, and the Dressings not be moved till they are ready to drop off of themselves. The Treatment of the Patient, after the Operation, must be regulated according to the Height of the Symptomatic Fever, which if it rises high, and the Pulse is hard and full, requires free repeated Bleedings.—Quiet, a low Regimen, Clysters, soft Emulsions, and febrifuge Mixtures, will be absolutely necessary in this Operation, and if Restlessness and Pain ensue, Recourse must be had to Opiates. And lastly, where the Progress of the Digestion is slow, the use of the *Cort. Peruv.* with the *Elix. Vit.* must be followed, as directed in §. 107. of Gun-shot Wounds. By these means, where the Patient is a proper Subject

Subject for the Operation, modern Surgery has taught us in a manner to secure Success.

Q. 241. When and how do perform the Operation of Castration?

A. This Operation is necessary in case the Testicle is become cancerous, or being scirrhus, is in danger of becoming so; provided the spermatic Chord is not enlarged within the Abdomen, and the Patient is free from Pain in the Back or Loins, which Symptoms generally forbid the Operation. It is likewise necessary to distinguish the Scirrhus of the Epididymis, from that of the Testicle, the former of which frequently being the Consequence of the Hernia Humoralis, tho' scirrhus, is not apt to degenerate into a cancerous Disposition, and therefore may be suffer'd to remain without any Prejudice. When the Operation is to be performed, the Parts being clean shaved, let the Patient be laid on a square Table about three Foot four Inches high, his Legs hanging down, and being firmly secured by your Assistants, make an Incision with the round edged Knife, *Tab. I. Fig. D.* from above the abdominal Rings, through the adiposa membrana, taking (if the Testicle is large) an oval sweep nearly to the Bottom of the Scrotum; then make a second Incision, beginning at the Top of the first so as nearly to meet

meet the former at the Bottom; the Diameter of this Oval is to be about one half of the lesser Circumference of the Testicle; the Incision being made, and the Vessels tied if necessary, the Skin is to be dissected away from the Chord; a Ligature is then to be passed round it, a little below the abdominal Rings, and if you have room between that Ligature and the Testicle, another is to be made about half an Inch lower; these Ligatures should be tied with what is called the Surgeons Knot, in which the Thread goes twice through the Loop; after this the Chord is to be divided below the second Ligature; and the Testicle, with the oval Piece of Skin on it, is to be dissected out of the Scrotum. By this method the Operation is facilitated, as by grasping the upper part of the Testicle in the left Hand I can turn it out more readily. It is to be observed, that I do not carry the oval Incision quite to the Bottom, as it will be shorter and easier to cut out the Testicle with a Piece of Skin on the lower part; and when I have clear'd the Testicle from the Scrotum the whole length of the Incision, I finish the Operation by cutting away the Testicle and Skin at the same time; this Process is however to be understood only of the Extirpation of a large Testicle; when it is small a simple Incision is sufficient. It has been recommended by some Authors to tie

tie the Blood-vessels without including the Vas deferens and Nerve, apprehending that the making the Ligature on the whole Chord, may be productive of Pain and Convulsions; but it is not only very difficult to separate the Nerve, but Experience has in a manner demonstrated that it is quite unnecessary, as the Operation succeeds very well in that Respect, if no other Accident intervenes.—After the Operation the Dressings are to be as in the Bubonocoele, and an exact Regimen observed, with every other Caution and Direction laid down for the Treatment of Patients after capital Operations,

Q. 242. How do you search for the Stone?

A. The Patient being laid supine, I introduce the oiled Catheter, *Tab. XVIII. fig. 2.* into the Urethra with its convex Part towards the Abdomen, till I find the Extremity meet with some Resistance in the Peritonæum; and then suddenly turning it round without violence with the concave part towards the Abdomen, I thrust the end of it gently downward under the Os pubis, and then upward into the Bladder, raising the extremity by depressing the handle. But one not versed in the proper Method of turning the Catheter, may better introduce it all together from the first, with the concave side towards the

Abdomen; and if the extremity hesitates at the entrance into the Bladder, it may be forwarded into it by directing it with the finger, first introduced into the Rectum. *Le Dran* advises to search the Patient standing, as he thinks the Stone will by that means fall down to the Neck of the Bladder, and be the readier felt. The Catheter must be chose in Size and Curvature agreeable to the Age of the Patient; but it may be much more easily introduced through the Urethra of the female Sex, which is much shorter, wider, and more direct. If the end of the Catheter in its course should meet with some Resistance from the Neck of the Bladder, or Caput gallinaginis, it must not be forced roughly forward, but rather drawn a little back, and urged on again through the middle of the Canal till it has entered the Bladder, when the End of it is to be directed towards every way, till its meeting with a hard sonorous Body discovers that there is a Stone, the Largeness, Roughness and Compactness of which may be judged of by feeling with the end of the Instrument.

Q. 243. How many ways are there of cutting for the Stone, and which do you prefer?

A. The first and oldest Method described by *Celsus* is known by the Name of the *Apparatus*

paratus minor from the fewness of Instruments used in it; nothing more being required than to dip the middle finger in Oil, and introduce it into the Anus, while the right hand pressing above the Os pubis upon the Bladder, so as to bring the Stone to its Neck, an Incision is then made with a Knife (*Tab. I. fig. D.*) in the left side of the Perinæum upon the Stone, which is next turned out through the Wound either with the Finger or a Scoop. Thus the same Parts were divided as at present in the lateral Operation, only we now use convenient Instruments to direct the Incision, and extract the Stone.—The *Apparatus major*, published by *Marianus* in 1524, is performed with a grooved Catheter or Staff, (*Tab. XVIII. fig. 3.*) oiled and introduced into the Bladder, and the convex or grooved Part being turned outwards pressing on the left side of the Seam in the Perinæum, an Incision is begun immediately below the Scrotum, and continued downwards to within an inch of the Anus, and then bringing the Point of the Knife forwards in the Groove, a good part of the Bulb of the Urethra is divided. Then the Gorget (*Tab. XVIII. fig. 6.*) is introduced, and after dilating the Urethra and Neck of the Bladder with the Forefinger, the Forceps (*Tab. XVIII. fig. 10.*) are introduced shut till they touch the Stone, when they are opened to

take hold of the Stone, and extracted with a moderate force downwards towards the Rectum. — The *high Operation* published by *Peter Francus* in 1561, after being discontinued from his time, was revived here at *London* in 1719 by Mr *John Douglass*. After disposing the Patient in a secure and proper Situation on a Table with Pillows under his Head, so as to bend his Body forward a little, to relax the Abdomen; the Bladder is distended with ten or twelve ounces of Barley-water injected by a Catheter, the Penis being in the mean time pressed close when the Instrument is withdrawn, to prevent the Return of the Liquor; and then an Incision is made with a round-edged Knife, to the length of about four inches, between the Recti and pyramidal Muscles through the adipose Membrane to the Bladder; after this, an Incision is made into the Bladder itself with a crooked Scalpel, carried a little under the Os pubis, introducing the Fore-finger of the left Hand immediately while the Water is running out, in order to direct the Forceps to the Stone.

This was Mr *Douglass's* Method, to which *Heister* recommends the following Particulars for the more safe and accurate Method of operating. In some Persons who cannot bear the Bladder being distended by Injection, he advises their being accusom'd by degrees

degrees to retain their Water in the Bladder; and on the Day of the Operation directs them to drink plentifully of small Liquors; and for the better retaining the Water till there is a sufficient Extension, he orders them to wear a Yoke on the Penis. He also makes an Assistant with his Fingers in Ano lift up the Bladder and Stone toward the Os Pubis. When he has made his Incision through the Teguments and Muscles; with his Fingers of his left Hand, he draws the Peritonæum upwards toward the Navel; he makes only a Puncture in the Bladder with the sharp-pointed Knife, and then introducing into the Perforation a blunt or button-pointed Knife, strait or crooked, makes an Incision upward about an inch or more; then introduces his Fingers into the Bladder, and drawing it upwards towards the Navel, he enlarges its Wound upwards or downwards, according to the Bigness of the Stone; which he afterwards extracts either with Fingers, Forceps or Hook, the Assistant with his Fingers in Ano pressing the Bladder and Stone as forward as possible. By this Method he says he never wounded the Peritonæum, of which he tells us there is danger if there is made but one Section of the Bladder from above downwards; nor does he wound the Fundus. And that he has even perform'd this Operation safely by this means where the Blad-

der was little or not at all distended, which could not be done by the other Method. When the Operation is finish'd, the Patient must be put to bed, and the Wound dress'd with dry Lint, which must be secured so as not to slip in and be lost in the Bladder, over it a Pledget of soft Digestive, and over that Compresses of soft Linen secured by a Bandage; and the Dressing must be attended to often and carefully, that the Urine may not excoriate the adjacent Parts, for which purpose soft cooling and drying Ointments with Embrocations must be apply'd all about. If the Passage of the Urine through the Urethra should be obstructed by any Mucus or Sand, you must inject warm Water through the Urethra with a Syringe into the Bladder. Some advise the constant Retention of a Catheter, in the Urethra that the Urine may always find a free Passage; and for this Purpose Mr *Morand* has contriv'd a short Catheter by which he promises himself great Advantages. But neither of these are recommended or us'd by our *English* Surgeons. In this Operation are the following Advantages. There is no Wound or Injury done to the Urethra, Sphincter and Neck of the Bladder, prostate Gland, Rectum, Vesiculæ Seminales, their excretory Duct, nor the Muscles of the Penis, either in cutting for or extracting of the

the Stone ; on which account there is no danger of incontinence of Urine, Fistula or Sterility ; nor is there any danger of a Hæmorrhage. Rough or sharp-pointed Stones may be extracted with great Ease by this Method, whereas by the others they occasion great Pain and Laceration, from which follow very dangerous Symptoms ; and lastly, the Stone is not so liable to be broke, and when broke, easier extracted.

On the other hand, this Method of operating is objected to, and has been laid aside for the following Reasons.

In some Patients the Bladder is so small, and so much under the Os Pubis, that the Peritonæum may be wounded, which is a Circumstance of terrible Consequence, from the Protrusion of the Intestine and the Urine getting into the Abdomen ; in others the Urine insinuating itself into the Cells of the Membrana Cellularis, produc'd Abscesses and Gangrenes of that part, which terminated fatally, and the Bladder has sometimes been burst by the Injection, which is always exceeding painful ; these are the chief Objections to this Method, to which it is reply'd, that in Children the Bladder lies high for the most part, and that before the Operation one may make a tolerable competent Judgment of the Situation and Largeness of the Bladder in Adults, by searching and know-

ing the quantity of the Injection it can hold. And as to the Inconveniencies attending the Discharge of Urine from the Wound, they may be remedied greatly by either the use of the Catheter or Canula, as propos'd by Mr *Sharp*, who is of opinion also, that the Abscesses imputed to the Insinuation of the Urine are chiefly caused by the Contusion of the Wound in extracting the Stone; and the Extension of the Bladder may be obtain'd by retaining the Urine, as directed before. It is likewise objected to this Operation, that Fragments and Sand have not so ready and free a Discharge from the Wound above the Os pubis, as from the Wound in Perinaeo; and that it is seldom perform'd with Success where the Patient is consumptive, has an Ulcer in the Kidneys or Bladder, or when the latter is scirrhus. To which last Objection this may be answered, that it holds good against performing the Operation any way; and to the former, that the Advantage resulting from being able to extract the Fragments, &c. at the Time of the Operation, out-ballances the Inconvenience arising for want of a depending Orifice. Upon the whole, it seems that where we are assur'd that the Stone and Bladder are large, which may sometimes be ascertain'd in a manner; then the High Operation should always take place. On the other hand, when we have
reason

reason to suspect the contrary, the lateral should be preferr'd, and where it is doubtful it must be decided by the Sagacity, Experience and Judgment of skilful Surgeons.

The *lateral Operation*, which is that now commonly used, was first put in practice by *Fryer James* at *Paris* in 1697, and is at present performed with some Improvement in the following manner. The Patient being laid on a Table, with his Hands and Feet tied, and the Staff (*Tab. XVIII. fig. 3, 4.*) passed as in the old way, let your Assistant hold it a little slanting on one side, so that the Direction of it may run exactly through the middle of the left Erector Penis and Accelerator Urinæ Muscles; then make your Incision through the Skin and Fat very large, beginning on one side of the Seam in Perinæo, a little above the place wounded in the old way, and finishing a little below the Anus, between it and the Tuberosity of the Ischium. This Wound must be carried on deeper between the Muscles, till the Prostate can be felt, when searching for the Staff, and fixing it properly if it has slipt, you must turn the edge of the Knife upwards, and cut the whole length of that Gland from within outwards, at the same time pushing down the Rectum with a finger or two of the left hand, by which Precautions the Gut will always

always escape wounding; after which the Operation finishes nearly in the same manner with the greater Apparatus; that is, by sliding the Gorget (*Tab. XVIII. fig. 3, 4.*) along the Groove of the Staff into the Bladder, and dilating the Parts with the Forefinger, the Forceps (*Tab. XVIII. fig. 10.*) are introduced shut till they touch the Stone, which is then grasped by a moderate force, and extracted downward towards the Rectum. In this Method, the remarkable Parts wounded by the Knife are the *Musculus transversalis Penis*, *Levator Ani*, and prostate Gland. In the old way, the Urethra only is wounded about two inches on this side the Prostate; and the Instruments are forced through the rest of the Passage, which is composed of the bulbous part of the Urethra, the membranous part of the Urethra, the Neck of the Bladder and prostate Gland. The chief Cautions necessary are to avoid wounding the Rectum, and to restrain the Hæmorrhage by Ligature with Needle and Thread, if any large Vessels are divided in the external Wound before the Extraction of the Stone. If after the Operation the Vessels of the Prostate bleed, the Hæmorrhage may be suppressed by applying Lint dipped in *Aq. Vitr.* or some other styptic Liquor; or if there is no Hæmorrhage, a Pledget of dry Lint spread with some mild Digest.

Digestive will suffice. If the Symptoms of a violent Inflammation ensue, and the Pains increase a few hours after the Operation, recourse must be had to Bleeding, Opiates, emollient Clysters, with a Fomentation applied externally in a Hog's Bladder, &c. If the Pulse is low, Blisters are often useful. the Dressings must be retained by a loose Bandage which from first to last are seldom any other than soft Digestive and dry Lint; for the whole Art of healing the Wound consists in the Force with which the Dossil is apply'd; if it be too hard and cramm'd in, it becomes a Tent, and prevents the Growth of Flesh, and by the continued Distension it makes, and the long Drain of the Urine, the whole Cavity becomes callous, and forms into a Fistula. On the other hand, if the Wound is dress'd quite superficial, the external Parts being more apt to heal and contract than the internal; the Consequence will be a Degree of Obstruction to the Urine and Matter, which lying about the Wound of the Bladder for want of a Discharge will indurate that part, and likewise occasion a Fistula. The first good Symptom after the Operation is the Urine coming freely away, as we then know the Lips of the Bladder and prostate Gland are not much inflamed. By this too we learn that the Kidneys are not so affected by the Operation

Operation as to cease doing their Office ; which though a very rare Circumstance may possibly occur. During the first Fortnight or three Weeks the Diet should be nothing but Spoon-meats ; the Patient must drink plentifully of Barley-water, and other diluting Liquors ; the Body must be kept open by Clysters and laxative Medicines ; and if the Wound is slow of Digestion, and the Patient restless, the Bark and Opiates are to be administer'd as occasion may require, according to the Directions given in other capital Operations.

Such is the Process and Method to be pursu'd in the Management of Persons after the Operation ; which with the Instruments already described, has been perform'd with greater Success hitherto than any other. Nevertheless it has receiv'd a very considerable Improvement by Mr Serjeant *Hawkins*, who invented the use of a Gorget which cuts on the right side, so that when it is introduced upon the Staff and push'd on into the Bladder, it makes an Incision on the left side of the Urethra and prostate Gland, and thus avoids the Danger of wounding the Rectum ; and as the external Incision is made large as when the Prostate is to be divided with the Knife, the Extraction of the Stone will be attended with the same Advantages,

Mr

Mr *Le Dran* has likewise contriv'd an addition to the Forceps to prevent breaking the Stone, which is as follows.—A little branch of Iron, whose extremity is bent at right Angles, somewhat resembling a Hook, is added to the Forceps; this Branch hangs from a Joint on one of the Handles. On the other Handle there is a Range of Orifices contiguous to each other for the Reception of the Hook. When the Stone is firmly grasp'd, the Operator lets the Hook into the Orifice, that happens to answer to the Width of the Forceps, by which means the Stone cannot be more compress'd; because the Branch of Iron resists the farther shutting of the Forceps, and consequently the Compression of the Stone. These are the whole of the Improvements and Perfection to which the Lateral Operation has as yet arrived, as practis'd in *England*. And now it will be necessary to mention the Objections made to this Method of operating, together with the Reply made by those who are Advocates for it.—These Objections are; Danger of a Hæmorrhage; Danger of wounding the Rectum and Vesiculæ Seminales; a Fistula in Perinæo, the Wound being subject to become fistulous; the Probability of an Incontinence of Urine from the Neck of the Bladder being hurt; and lastly, it is said this Operation can never become universally effectual, because

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it cannot be performed when the Catheter or Staff cannot be introduced, of which there is a Possibility. To which may be added, the Adhesion of the Stone which though extremely rare, yet nevertheless sometimes may happen; and would render the Extraction very difficult, if not impracticable. To which the Advocates for this Operation answer, That the Danger of a Hemorrhage in Children is very little; and that in Men, if you make your external Incision sufficiently large, you may take up with the Needle all the Branches of the Hypogastrick Artery which lie on this side the prostate Gland; but that the Necessity for that very seldom occurs. That it is very rare that Vessels of the Prostate burst after the Operation; but if the Patient is plethorick, lest such an Accident should happen from the symptomatic Fever, it will be proper to take away twelve ounces or more of Blood, and give him an Opiate. If the Flux is considerable, and the Vessel cannot be got at, a Canula arm'd with Rag or Lint dipt in some styptic, may be introduced into the Wound, which very soon stops the bleeding. The Introduction of a Canula is likewise recommended, where the Bladder is judg'd to be grown callous, or if a Stone or Fragments of a Stone should be left behind; and it must be continu'd there till the Suppuration is perfectly form'd before

fore you attempt to extract the Stone that is left, as that would be very improper to be attempted while the Lips of the Bladder are inflam'd and swell'd. The Danger of wounding the Rectum may be avoided by carefully observing the Directions attentively given to perform the Operation, to which likewise the Use of the cutting Gorget will conduce. The Vesiculæ Seminales, if wounded, will heal up without Inconvenience; for the Cause of Impotency from thence is an Accident that hardly ever happens. If the Wound is properly taken care of, a Fistula seldom occurs, without some particular Cause, such as a Stricture of the Urethra, &c. which being cur'd, and the Callosity remov'd by proper Applications, the Wound easily heals. But this, and an Incontinence of Urine, may sometimes intervene; for no degree of Skill can absolutely prevent them where the Neck of the Bladder is concern'd in the Operation. The Case of an Adhesion is so rare, that neither *Cbeselden* nor *Sharp* mention their having met with it; and when the Catheter cannot be introduc'd (a Circumstance as rare) you may have Recourse either to the high Operation, or Mr *Foubert's* Method of cutting on a groov'd Trocar thrust into the Bladder through the Perinæum. Sometimes an Ecchymosis spreads over the Scrotum, which if not dispers'd by spirituous Embro-

Embrocations and Fomentations, terminated in a Suppuration, in which the Testicle may be concern'd, but being treated properly as an Imposthumation, soon does well.

These are all the Inconveniencies, Accidents and Objections that the Lateral Operation is subject to, and they are candidly and fairly answered. But nothing can speak so strong in its Favour as the very extraordinary and unparalell'd Success it has met with in *England*, where it continues to be preferr'd to the High Operation by most of the *English* Surgeons, notwithstanding some late Attempts to revive the latter.

To conclude, in both these Operations, there should be Instruments of different Sizes, which should be put into warm Water; Oil, and warm Water with Sponges to soak up the Blood, and the Patient should have a Stool (and in the lateral Operation empty the Bladder) if possible immediately before the Operation.

Q. 244. How do you extract the Stone in Women?

A. The Urethra is so short, and capable of so great Dilatation in the female Sex, that there is hardly ever any occasion to cut them for extracting the Stone, insomuch that we have many Instances of Stones discharged with-

without cutting, which have even equalled the size of Hen and Geese Eggs. They are to be placed as in cutting for the Stone, and after introducing a strait Director into the Bladder through the Urethra, a Gorget is transmitted through the Director, and thro' the Gorget is conveyed a pair of Forceps to extract the Stone, which may be done without cutting, except when it is extremely large; in which Case it is more adviseable to make an Incision laterally on each side the Urethra, without injuring the Vagina, rather than to force a Laceration of it. Sometimes if the Stone is of a soft Texture, it may be first broke by the Forceps, and extracted in Fragments, when it is too large to be taken out entire. But as an incurable Incontinency of the Urine frequently attends this Method of extracting the Stone, some prefer the making an Incision through the upper part of the Vagina into the Bladder, extracting the Stone that way; and thus *Hildanus* succeeded, *Cent. 1. Obs. 68. Cent. 3. Obs. 69.* After the Operation the Parts are to be fomented and dressed with emollient Ointments, and the Symptoms happening in consequence treated as in the Operation for the Stone in Men.

Q. 245. When and how do you perform the Paracentesis of the Bladder?

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A. This Operation is necessary in a Suppression of Urine where the Catheter cannot be introduced, and no Relief can be obtained by other means; and there are two Methods in practice, one making the Puncture with a Trocar above the Os Pubis in the Place where the Operation for the Stone is performed; the other in that part of the Perinæum which is wounded in cutting by the greater Apparatus, through the Urethra and Neck of the Bladder; or else, carrying it between the Accelerator Urinæ and Erector Penis, into that Part of the Bladder, lying between the prostate Gland and the Insertion of the Ureter. The Trocar being introduced into the Bladder, is withdrawn, leaving the Canula in the Wound, till the Cause of the Suppression is removed. The Difficulty and Inconveniency attending the Performance of the Puncture in Perinæo either way, makes them very seldom made use of, but if the Puncture between the Accelerator Urinæ and Erector Penis is intended to be performed, it will be right to introduce the Fore-finger of the left Hand up the Rectum to feel the prostate Gland, which will be a Guide for the Direction of the Trocar, which is to be carried parallel to the Rectum a little above and on one side the Finger. In both Methods of puncturing
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in Perinaeo the Patient is to be placed as in cutting for the Stone.

The Puncture above the Os Pubis, is generally preferr'd as being easier and safer performed, and the Canula in that Case should have two Rings to it as in the Empyema, by which with a Ribband it may be tied round the Body, and prevented from falling out of the Bladder, and it should not be longer than two Inches and a half. In all cases of this nature the Canula must continue in, or at least be replaced by another, till the Inflammation is gone off, and the Urine comes the natural way. These are the only Methods taken notice of by Authors, till very lately.

In the Miscellaneous Observations in Surgery, published by Mr Pouteau, Surgeon at Lyons in France, there is a new Method of puncturing the Bladder proposed by Mons. Plurant, which is with a curved Trocar through the Rectum into the posterior part of the Bladder. He gives three Histories of Cases in which it was performed; the first on a Man of 72 Years of Age in the *Hotel de Charité*, who had such an Obstruction in the Urethra, that the Catheter could not be introduced, and no Water having been made for two Days, and the Symptoms urgent, he was going to perform the Puncture in Perinaeo; but introducing his Finger into

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the Anus, to examine the State of the Bladder, he found it so prominent in that Place, and within his Reach, that he determin'd to puncture it there, and accordingly with the Trocar used in the Paracentesis he perforated the Rectum and Bladder, and drew off to the last Drop, a brown foetid Urine; the Canula was left in for three or four Days, and not being well adapted to the Purpose, was retained with some Inconvenience and Difficulty, but at the End of that Time the Urine resuming its natural Course, it was taken out, and afterward no more Urine came through the Wound, of which the Patient was soon and easily cured.—Two Years afterward he had an Opportunity of performing it a second Time on one of the lower sort of People, who had been treated unskilfully by an Empirick, and in whom the Symptoms of a Return of the Urine into the Blood were come on; having in vain attempted to introduce the Catheter on account of the Parts being much hurt, by several previous fruitless and unskilful Tryals; he punctured the Rectum and Bladder as before, and drew off all the Water; the Canula was kept in for a Night and a Day, during which the Urine discharged without ceasing. No Accident happen'd that could be imputed to the Operation, and his Death, which happen'd the next Day, was

was look'd upon as the Consequence of the Disorder created in the animal Oeconomy, for want of the proper Secretions and Excretions. He offered to open the Body, to examine the State of the parts wounded and diseased, but the Prejudice of the Relations, who were low People, would not permit him to do it.

By this second Operation he was convinced that he wanted an Improvement in his Trocar, he therefore contrived a curved one, see *Fig. D. Tab. V.* somewhat resembling that used to perforate the Bladder above the Os Pubis; it was longer than the former that he used, and the broad End or Shoulder of the Canula was small with a Hole on each side to put a Ribband through to be fasten'd before and behind to a Girdle placed round the Waist for that purpose. In the third Operation he made use of this Trocar on a Gentleman aged about 52, of a tender Constitution, very much harrassed with Suppressions of Urine, and the Urethra in such a State from the frequent Introductions of the Catheter, and Attempts to do it, that it could not be introduced neither by him nor another Surgeon celebrated for his Dexterity in that Manœuvre. He performed this Operation in the following manner; the Patient was placed in an horizontal Posture, on the Side of his Bed, his Thighs bent, spread open and held

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asunder by two Assistants, the Fore-finger of the left Hand, being oiled, was introduced into the Rectum as far forward as possible; when he felt the Prominence of the Bladder which was very great, he took the curved Trocar rubb'd with Oil in his right Hand, the Point withdrawn so as to be hid within the Canula; and directing it along the Finger of his left Hand to the Prominence of the Bladder, he then push'd the Handle of the Trocar so as to advance the Point with sufficient Force to introduce the Blade and Canula together at least the Depth of an Inch; then withdrawing his Finger and the Trocar, the Urine issued out through the Canula which he held to the last Drop. He then secured it in its Position by means of the Ribbands and Girdle before mention'd. As the Patient had suffer'd very little by the Operation, he had a mind to rise the next Morning; he therefore added the T Bandage double only beside the Scrotum, which with a Compress of several Folds had very good Effects. When the Patient went to stool, he unloosen'd the T Bandage, and raised up and supported the Canula. But being freed from the Pain and Danger of the Suppression of Urine, he, who but the Day before thought himself so happy to void a little Urine, began to complain of its continual Discharge, which slight
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Inconvenience was soon removed by means of a little stopple of Wood, fitted to the end of the Canula, which he took out only four or five times a Day. The Patient grew better after the Operation immediately, and by the Help of warm Baths, soft Injections, and a few Doses of Cassia, the Inflammation went off; on the third Day the Urine came the right way, and on the fourth the Canula was taken out, and except a few Drops that came away at that time, no more was discharged through the Anus.

Such is his Account of these Operations, and he finishes with obviating the Objection that may be made to the Practice on account of the Danger of wounding the Vesiculæ Seminales, and the hæmorrhoidal Arteries. The former, he says, may be avoided by making the Puncture pretty far up, and in the Middle of the Rectum, the Point of the Trocar being hid in the Canula till directed by the Finger to the right Place. And there is no danger of a Hæmorrhage, as the Course of these Arteries are principally in the posterior part of the Rectum, and the Wound in the anterior. The Wound he thinks will be of little Consequence and easily heal, though in a membranous part, especially as hereabouts the fleshy Fibres of the Sphincter begin to appear. And he concludes with recommending the Vagina to be punctured in

the same manner in Women, in Suppressions of Urine, which he thinks will be still easier, as there are no Pæces to incommode the Position of the Canula.

I shall only observe, that as this Operation is extreamly simple and easy to perform, and there are often Opportunities of trying it, where the Catheter cannot be introduced, and the Danger is pressing, the Puncture in Perinæo, and above the Os Pubis, too difficult for the Operator, or the Patient an improper Subject, on account of Corpulency, or other Reasons, it will be certainly right to try it, as there can be no immediate Danger, and to save Life, the Inconveniency of a Fistula is nothing, supposing it to be the Consequence.

If on the other hand Experience proves it to be safe and effectual, it will be a very important Improvement in the Art of Surgery, as it may be practised without any Difficulty by almost any Person whatever.

Q. 246. How do you treat an Incontinency of Urine in Males?

A. As this often proceeds from Weakness in old Age, a Palsy or Stone in the Bladder, incapable of Relief from internal Medicines, Surgeons have therefore contrived a small Instrument with a Screw, called the *Yake*, to com-

compress the Urethra near the Neck of the Bladder, represented in *Tab. III. fig. 7.* which being lined with Velvet may be taken off and re-applied as there is occasion, so as to make it sit easily upon the Part,

Q. 247. What is the Nature and Treatment of a *Phymosis*?

A. A *Phymosis* is such a Stricture of the Prepuce over the Glans Penis, that it cannot be denudated or drawn back, which when it is venereal, confining Shankers and virulent Matter render it necessary to be cut open. If then discutient Fomentations or Cataplasms will not remove the Stricture, the Prepuce is to be extended forward, while the Glans is pressed back, and then divided laterally either by the Scissars or Knife, slitting up to the very extremity at the neck of the Glans; after which a pretty copious Hæmorrhage usually ensues, and may be suffer'd to bleed some time, as it may serve to reduce the Inflammation and Tumor: but where a Hæmorrhage is improper from the Weakness of the Patient, or other Circumstances, the Incision is better made with the Knife on one side of the Prepuce, rather than above where the Vessels are very large. If the Stricture has caused an incipient Gangrene in the Glans, I scarify to the quick, and apply an Infusion of *theriaca in S. V. campb.* The same Operation

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ration is sometimes necessary in a natural Phymosis; and in venereal Cases where the Prepuce is very callous, it may be proper to take it all off.

Q. 248. What is the Nature and Treatment of a *Periphymosis*?

A. This being the Reverse of the former, is when the Prepuce turns back behind the Glans, so that it cannot be brought forwards to cover the Glans. Some indeed have the Prepuce naturally turned back in this manner without any inconvenience: but when the Stricture hence arising is so great, as to obstruct the Circulation in the Glans, and threaten a Gangrene, several small Incisions must be made by the Lancet in the Stricture longitudinally, as must be also done when the Prepuce is distended with watery Tumors called *CbrySTALLINES*; and then the Dressing may be concluded by fomenting with Discutients, as an Infusion of *Theriaca in S. V. camph.* and dressing with Digestives.

Q. 249. How do you remove venereal Warts from the Prepuce and Glans?

A. These are commonly a sort of fungous Flesh of very speedy Growth, and may be easily taken down by mild Escharotics, as *alum. ust. merc. præcip. rub. &c.* mixed with a little digestive Ointment; or if they hang by

by a small Neck, they may be taken off by the Knife.

Q. 250. How do you remove a Mortification in the Penis?

A. This is best done by introducing a silver Canula into the Urethra, then making a strict Ligature with thread or silk upon the sound part of the Penis immediately behind that which is sphacelated, so as to compress the same close to the Canula, keeping the Ligature tight till the mortified Part separates from the rest.

Q. 251. What is the Nature and Treatment of the Venereal Disease?

A. As the Nature of the Venereal Virus has never yet been explained with Certainty; and the Theory of different Authors, though very ingenious in some, may rather mislead than inform us, I think it best to decline entering into a Discussion of that Point, and shall therefore proceed to describe the Disease in its different States, its Appearances in them, and the Method of Treatment according to the most generally approved modern Practice.—The Venereal Disease is commonly divided into two Stages; the one called the first degree of Infection, when it is supposed to be local, and the Blood not infected. In this State its usual Appearance is either by
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a Running from the Urethra, or a Chancre; this Running is at first pale, white, and mucous, attended with some degree of Heat of Urine, which usually shews itself in four or five Days after Infection; and afterwards grows yellower, sometimes greenish, with increased Heat, and great Sharpness of Urine, frequent Irritations and Uneasiness in the Urethra, and Inclinations to make water; these are accompanied often with a very painful Symptom of an Erection of the Penis in the Night, which seems as if it were compressed on both sides, and the Frænum is contracted; the Pain of which soon extends all along the under part of the Penis. This Running from a Venereal Infection, is called a Clap or Gonorrhæa; and the Manner of treating this State of the Disease must be regulated according to the Violence of the Symptoms. When they are mild, the Running small, the Heat of Urine trifling, with no Inflammation, cooling, laxative and diuretic Medicines, such as the *Electar. ad Gonorrh. Virulent.* in the *Pharmacopeia Chirurgic.* annexed, with regular living, will soon remove the Complaint. When the Discharge is virulent, the Heat of Urine very great, and the inflammatory Symptoms above described come on with Rapidity; it will be necessary to recur to frequent Bleedings, cooling Emulsions, and Barley Water with Nitre

Nitre and Gum Arabic dissolved in them. And the Patient must be gently purged, with mild cooling Purges; at the same time if the Pain is very great, it will be necessary to make use of Opiates. If this Treatment does not take off the Virulency of the Running, and the Violence of the Symptoms, some of the best Practitioners order the *Ung. Mercurial*, to be rubb'd in to the Quantity of 3ss. the whole Length of the Urethra, or three or four Grains of Calomel to be given at Night, and purged off the next Day. While others are of Opinion, that during the Inflammation there should be no use made of Mercury either internally or externally. When the Inflammation is gone off, and the Running begins to be of a more mucous Aspect, and the Urine is made without Irritation or Pain, the use of the *Electar. post Inflammat.* may be commenced, which generally in a short time finishes the Cure; if there should be a great Laxity or Debility of the Vessels, and the Discharge continues longer than usual, by a Fluxion of Humours to the Urethra, an Injection may be made use of very safely; and those of the mercurial kind may generally be preferr'd, not particularly from any Supposition of their specific Virtue in destroying or counter-acting the Virus of the Infection, for little of this Virtue can be communicated to the parts affected

affected by this slight manner of using it. But as the Mercurials principally recommended for this Purpose are composed of Quicksilver, and an Acid formed into different Preparations by different Processes. When they are added to a Liquid in order to become an Injection, it is of a restraining Nature, and acts as such in a greater or less degree, according to the Quantity of the Mercurial Preparation added to the Liquor. This is the proper Nature and Use of Injections, about which so many Persons differ, and it is equally certain that they may have the same Advantages and the same ill Consequences are used on different Occasions; for they may be prejudicial if employed improperly, and may be used with Safety and Success when the Discharge is in a Condition to be stopped.

This is the Process generally made use of by many experienced and skilful Practitioners, in the Treatment of a Gonorrhæa; but sometimes, during the Management either from the Irregularity of the Patient, or catching cold, or the improper use of Astringents, whether Injections, or others; a Hernia Humoralis, or Inflammation or Swelling of one or both Testicles arise, or a Bubo in the Groin, from the venereal Discharge being checked and thrown back on those Parts. In the Treatment of the Hernia Humoralis,
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which is attended with great Pain in the Back as well as in the Testicle, it is necessary to bleed largely immediately, to apply a Pultice of Bread and Milk with *Ung. Mercurial.* enough to keep the Pultice moist, and to suspend the Scrotum in a Bag-truss. A Clyster, in case the Body is bound, is to be given, and follow'd after its Operation (if the Symptoms of Pain and Swelling continue) by an *Ipecacuanba* Vomit. If this Method does not abate the Violence of the Symptoms, it must be repeated, and when the Running comes on again it should be suffer'd to continue for some time before it is checked, that the Infection may go off entirely that way. The use of Opiates is almost needless to mention in case of great Pain; but it may be necessary to remark, that to provoke the Return of the Running the Exhibition of three or four Grains of *Calomel* in a Bolus or Pill every other Evening will conduce greatly, and may be ventured on with Safety, observing to prevent it affecting the Mouth, by accompanying the use of it with gentle Purgings. If a Bubo appears in the Groin, and is painful, and the Signs of a quick Suppuration appear, it must be encouraged by the use of a warm Plaster or suppurative Cataplasms. But if the Hardness continues without Pain, and the Suppuration is slow, it is best without waiting for

for it, to apply a Caustic and make a large opening, and when the Eschar is come off, to destroy the Glands with Escharotics; or should these Applications fail, to extirpate them by the Knife (if safe) or turn them out with the Finger. In the Course of this Treatment, mercurial Frictions with a Decoct. of *Sarsaparilla*, will be proper, or otherwise a use of mercurial alterative Pills. Or what is safer than either a slight Spitting may be raised if consistent with the Patient's Affairs. These are the Symptoms that happen during, or are consequent to, the first Attack of the Disease if it shews itself in a Gonorrhæa, but there is also another Companion or rather Follower of a Gonorrhæa, which is the Consequence of improperly using astringent Injections, or a long Continuance of the Running. This is a *Stricture*, being a Contraction, shrivelling up or thickening of the Membrane, that lines the Urethra; frequently accompanied with a Discharge of different Colours, sometimes resembling a pale mucus, at others appearing yellowish, and of a more or less virulent Nature, the Urine being greatly and sometimes totally obstructed; and when it passes, making a forked or double Stream, and ending with a dripping. Frequently from the Return of this Complaint, and its Violence, an Inflammation of the Urethra, and the Neck

Neck of the Bladder happens, which terminates in a Collection of Matter in Perinæo, and this too often leaves a Fistula behind it. This makes it a Matter of Consequence, and therefore requires early Attention, by which means it is easily cured, but if suffer'd to continue it becomes obstinate, and is not removed without much Difficulty. The Cure consists in passing a Bougie dipp'd in Oil up the Urethra every, or every other Day, which must be introduced gently, and yet with force enough to overcome the Resistance it meets with, and pass beyond the affected parts. This at first may be permitted to remain for about half an hour, and after the fourth or fifth time longer, as three or four hours, if not very painful; if the Parts inflame, the Patient must be bled, a gentle Purge exhibited, and the use of the Bougie desisted from till the Inflammation is gone off. It sometimes happens that it is very difficult to pass the Bougie; in this Case the Urethra may be anointed its whole Length with *Ung. Mercur.* and a warm Bath made use of; or the Penis may be frequently soaked in warm Milk and Water; the Patient should be bled and purged, and use a very abstemious Diet, by which Method, the Parts may be relaxed, and by persisting (tho' disappointed in the first Attempts,) the Bougie may at length be passed as far as is

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necessary; in the beginning it is proper to use a small one, and by degrees you may increase the Size, till the Urethra is sufficiently stretched, which is all that is requisite for the Cure of a Stricture or obstructed Urethra, according to the opinion of some of the most experienced Surgeons. But as suppurative Bougies have within these few Years been brought into practice and greatly extolled by some Practitioners, I have inserted in the *Index Remediorum*, the Method of making them as well as the common ones. When the Urethra is restored to its Dimensions, and perfectly free from Obstructions, the use of the Candle may be gradually left off, by only using it once a Week, but it must be some Months before it is quite discarded.

I shall now give an Account of the other usual Appearance of the Venereal Disease on the first Infection, commonly called the *Chancre*; this is generally the original Symptom of all Poxes, and is distinguished by the different Appellations of primary and symptomatical; the former of which implies a mere local Taint on the first Infection; the latter a Symptom of universal confirmed Lues. The primary Chancre is frequently accompanied with Pain and Inflammation, a Phymosis, or Paraphymosis; in the Phymo-

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sis by their being hidden from the Sight, Chancres are often very troublesome, and cannot be cured till that is removed; which if it is obstinate, and does not yield to the proper Remedies, must undergo the Operation mentioned in Q. 247. To remove the Inflammation, bleeding largely, the use of the mercurial Uction on the Part, discutient Cataplasms and Fomentations, with Evacuations, must be used. When the Inflammation is abated, the internal use of mercurial Preparations, as *Calomel*, *Merc. calcinat.* the *Solutio Sublimat.* in *S. V.* or the *Pil. Cæruleæ* must be commenced, and continued for some considerable time after the Chancre is healed, accompanied with the *Decoct. Sarsaparil.*—The external Dressing of the Chancre may be with *Ung. Cærul. fortius*, and if very foul, the *Merc. precipit. corrosiv.* may be sprinkled on now and then, which will soon bring it to a State of healing. Fumigations of the *Cinnab. Antimon.* will likewise conduce to the Removal of this Complaint and its Attendants. If the Patient dislikes the internal use of Mercury, Frictions of the *Ung. Merc.* in small Quantities must be persisted in for such time as the Chancre continues and some time afterwards, observing to keep the Body in a cool laxative State during the whole Time, and the Patient to a very strict Regi-

men ; after which he may drink the *Decoct. Sarsaparil.* for a Month or thereabouts, and must refrain from all Excesses. By this Method primary Chancres, or those that are local, may certainly be cured ; and frequently those of the more inveterate sort, which are the Symptoms of the *Lues Venerea*. The Cure of those Chancres which heal by the common Digestives and Epuloticks without any Application of Mercury to them in any shape, may, I think, be better depended on, than when they are treated and dressed with mercurial Ointments or Lotions ; as we are then sure that the Virus is eradicated from the Constitution, by the use of the proper Remedies prescribed, and the Blood cleared of the Infection, since they in a manner heal of themselves, the original cause being removed.

When the *Lues Venerea* is universal, the following Symptoms discover it ; that is, some or more of them, for it seldom or never happens that they all exist at the same time in one Person.

Dry, furfuraceous Eruptions on the Skin, callous Tubercles, with a yellow Scab at top about the Forehead and Temples ; Ulcers of the Throat, Palate and Inside of the Nose ; Nocturnal Pains, chiefly affecting the Shins, Arms and Head, Gummata, Tophs, and Ganglia,

Ganglia, affecting the tendinous and ligamentous parts; Exostoses and Caries of the Bones, particularly the Ulna, Tibia and Cranium.—In these Cases, a Salivation is the only thing to be depended on, and that must afterwards be succeeded by a constant, regular use of the *Sarsaparilla Decoct.* for a considerable time. The use of mercurial Frictions without raising a Spitting, the *Mercur. Calcinat.* the *Solutio Mercur. Sublimat. corrosiv.* the alterative Pills with crude Mercury, it is true sometimes succeed and remove these Complaints for a Time, but they are apt too frequently to return; for which reason it still continues to be the Practice in order totally to eradicate the Venereal Lues, to salivate the Patient either by the internal or external use of Mercury. Of these two Methods the latter is generally preferr'd, and the Method of doing it is this.

The Patient should be bled once, and purged to empty the intestinal Canal, and it will not be amiss in dry Constitutions and rigid Fibres, to use the warm Bath once or oftener before the Uction.—This is to be understood though of a Patient that is not exhausted and emaciated by the Disease, in which case, bleeding, purging, and bathing, might be very prejudicial. When the Uction is to be used the wearing of a Flan-

nel Shirt, Drawers, Stockings, Muffler and Cap, are necessary, more or less, according to the Time of year and the prevailing degree of Heat or Cold ; a temperate Medium between both being to be observed. The Uñction made use of is that in the *Index Remedior.* and 3j of it may be rubbed in before the Fire into each Leg every other Night, or oftener, according to the Constitution of the Patient, and the Opinion of the Surgeon. After the Uñction the Patient must put on his Drawers and Stockings and go to bed, where he should drink a Draught of any diluting Liquor warm ; when he has anointed three times, the Signs of an approaching Salivation are to be attended to, which are a brackish Taste and Heat in the Mouth, Heaviness, and sometimes Pain in the Head, a quick Pulse, Redness and Swelling of the salival Glands and Ducts, foetid Breath, loose Teeth, swell'd and sore Gums, Tongue and Cheeks ; as these increase the Salivation comes on, and the Uñction is to be repeated or discontinued according to their degree, until the Sloughs are formed in the Mouth, and the Patient spits three or four pints in twenty-four Hours. During the whole course he is to drink very plentifully of diluting Liquors, and wash his Mouth with some, and spit it out before he drinks any down. The Body is to be kept rather

rather laxative than costive, and if the Head-ach is violent, and the Pulse high, he should be bled, and a Clyster administer'd; if a Diarrhæa comes on, and is threatening, the *Tinct. Thebaic.* or the *Pulvis à bolo* must be given, or the *Philon. Roman.* in such quantity as the Nature and Exigency of the Case demands, and the Age, Strength and Constitution of the Patient require. The Salivation should be kept up to the Height before mention'd, according to the Mildness or Obstinacy of the Disease, and its Symptoms, and what the Patient can go through. In common cases one and twenty Days Spitting of three or four pints in twenty-four Hours is the general Rule, but this must be varied according to the Judgment and Opinion of the Surgeon. When the Salivation is to decline, the Flannel Apparatus may be changed, and after the Intestines have been emptied and cleansed by a Cathartic or two, if the Patient's Mouth is well enough, he may be indulged with boil'd Chicken, Veal or Mutton, or Fish, in a sparing manner; but it must be strongly enforced, that he do not upon his going abroad, and finding himself freed from his Complaints, indulge himself in a free way of living, but continue for a Month, during his drinking the *Sarsaparil. Decoct.* to be regular and abstemious in his Diet, which must consist of light inno-

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cent Meats, as Lamb, Veal, Chicken, Rabbit, and Fish, with Puddings; otherwise, very bad Consequences may ensue, by a sudden Change from almost total Abstinence to indulging the Appetite in too high and free a Manner.

In case of Caries in the Bones, they are to be managed as directed in Q. 80. Ulcers in the Throat may be touched with the *Lotio detergens* in the *Index Remedior.* and fumigated with *Cinnab. Antim.* through a Funnel. The other attendant Symptoms, as Bubo, Chancre, Venereal Warts, &c. have been treated of under their respective Articles, and will be found in the Index.

This is a concise, but comprehensive Method of treating the Venereal Disease; for a more particular Account, consult *Astruc*, who has wrote the latest and fullest of it in every Respect *.

Q. 252. What is the best and most approved of Method of Inoculating Persons for the Small Pox?

* The Publick will very shortly be favoured with some Observations on Venereal Complaints, by a Gentleman whose Knowledge in his Profession is exceeded by none, and to whom I am indebted for some part of the fore-going Account. These Observations, the Result of Experience and Attention, will correct some Mistakes, illustrate and explain some Particulars, and throw a new Light upon many important Points in the Treatment of this Disease; and are made with a Precision, Candour, and Judgment peculiar to the sagacious and understanding Author.

A.

A. For practising this Operation with Success, as the principal Dependence is on the State of Health of the Patient at the Time of Inoculation, some Practitioners have stated very strict and regular Methods of treating different Constitutions, in order to bring the Habit of Body into such a Condition, as may make it safe to venture on the Operation. But the most prudent way of Proceeding in this Case, will be never to inoculate any Person whose Health is such as to require more Preparation than a regular Diet for two or three Weeks before, in an abstemious way; two or three gentle Purges, and one bleeding; which should be on the Day before the Operation, or on the Morning of that Day. By a regular Diet, I mean light fresh Meats of easy Digestion, eat sparingly; Puddings, such as Bread, Rice and Apple, the plainer the better, well boiled with little Butter and Sugar; Potatoes, Asparagus, Turneps, and other Vegetables, according to the Age and Custom of the Patient; no salt or seasoned Meats, Cheese or rich Food of any Kind, and no Liquor stronger than small Beer. These will be Directions sufficient for the Conduct of those from four Years to forty, or thereabouts; to which Age Mr *Ranby* confines the Operation, whose Practice and Success has been very great. And though the Inoculation of Children

dren at the Breast is strongly recommended by some eminent Physicians and others, it is universally agreed, that during the Time of Dentition it should not be perform'd; therefore it must be done in the first Months, as some Children breed their Teeth much earlier than others, and the Hazard of a fatal Convulsion on the Eruption, to which Children are very subject at that time of life, with other Inconveniencies their tender Age is liable to, makes it rather more eligible to defer the Operation till they are four years old or thereabouts, after which time the sooner it is done the better, if there is nothing in the Child's Constitution that may forbid it. Of this sort are scrophulous and cutaneous Disorders, and hard Bellies; and indeed as most Children are subject to Worms or Slime in their Bowels, it will be advisable to let their previous Purges be of the Vermifuge kind. The Season of the Year is next to be consider'd, and the Spring is generally reckon'd, in this Country, the most favourable, though it is perform'd now at all times of the Year in the Small-Pox-Hospital, and many other Places, with surprizing Success. It will only require a little more Caution in the Patients to avoid the Extrems of Heat and Cold, and during their Confinement, the Air in the Room they are in may generally be brought to such a temperate Degree as is requisite for their Safety.

Safety.—When the Operation is to be performed, let the Patient be bled as before mentioned, in quantity proportioned to the Age and Habit; and the Matter having been taken a Day or two before from the ripe and well digested Pustules of a kindly Small Pox, in an otherwise healthy Subject, by drawing of Lint rolled to the Size of the coarsest thread thro' them, the Pustule first opened with a Lancet or Needle; let an Incision be made in both Arms in that part where Issues are cut, about three quarters of an Inch in length in grown Persons, so as to wound the true Skin, but not to go through it, and then apply the Thread that has been moisten'd, of the length of the Incision, a small Pledgit of Digestive over it, and a Plaster of simple Diachylon, with a Roller. These are to remain on to the next Day but one, and then to be removed and dressed every Day with the Digestive and Plaster. After Inoculation the Patient is to be confined to the House, and is not to eat Meat more than once, and that not after the third Day; and on the other Days, Potatoes, Pudding, &c. till the Time of sickening, when he is to be put to bed, and there supply'd with diluting Liquors, as Sage, Balm and common Tea; Barley Water, Pippin Water, Milk and Water, &c. His Body is to be rather open than costive, and if a Stool is wanting, it should be procured

cured by a Clyster, especially at the Time of Eruption, when it will not be safe to give any Laxative by the Mouth. It sometimes happens that the Person inoculated, if under twelve Years of Age, is attacked with Fits at the Time of Eruption or before; in that case it is not proper to bleed, but a Blister should be applied between the Shoulders, and a Clyster administer'd, of the most simple solutive kind. No other Medicine is wanted for the generality, as the Disease is almost always mild and favourable; but if it should happen otherwise, it must be treated in the same manner as the natural Small Pox. When the Pock is turn'd, and in a manner shell'd off, a Purge is to be given, and repeated as many times as it may be necessary, after which it will be proper to bleed the Patient again in proportion to the Age and Strength.

The Signs of the Operation taking place are, a slight Inflammation about the Wound, which has white Edges, with a tingling or itching on or about the fifth Day, and afterwards a shooting Pain in the Arm-pits. In the Time of Eruption sometimes a slight Hæmorrhage at the Nose happens, which is commonly preceded by the tingling of the Nostril it comes from; this is not to be minded, as it most commonly relieves the Patient in some measure. Children are like-
wise

wife sometimes attacked with a Purging in the beginning of the Distemper; this should not be stopp'd unless it so considerable as to weaken the Patient. A Rash sometimes also comes out on the Skin, but commonly goes off by Sweat if the Patient drinks plentifully, and the Small Pox appears very favourably. It is not uncommon neither for an Inflammation of the Erysipelatous kind to appear about the Incisions, but it soon gives way to a Pultice of Bread and Milk, &c. with bleeding and gentle purging. These are the chief Accidents that attend Inoculation; and this Method of conducting the Patient through the whole course of the Disease has been attended with the greatest Success.

F I N I S.

PHARMACOPEIA CHIRURGICA BREVIS,

V E L

Index Remediorum,

A Short Chirurgical Dispensatory ;

Index of Remedies.

Medicamenta Externa.

External Medicines.

I. CATAPLASMA EMOLLIENS.

An Emollient Cataplasma.

Take of Milk, fix ounces; of Oil of Olives, one ounce; and of Bread Crumbs, a sufficient quantity to produce the due consistence. Add the Bread to the Milk, when of a boiling Heat; and afterwards beat the Oil well with them.

2. CATA-

2. CATAPLASMA DISCUTIENS.

Discutient Cataplasm.

Take of Oatmeal, and Lees of Stale Beer, the quantities requisite to the due consistence; and form them into a Cataplasm.

3. CATAPLASMA RESOLVENS.

Resolvent Cataplasm.

Take of thick Lees of Wine, and Vinegar, each half a pint; of crude Sal Ammoniac, one ounce; and of Oatmeal or Bran, as much as may be sufficient to the due consistence. Having first dissolved the Sal Ammoniac in part of the Lees, mix the whole together into the form of a cataplasm.

4. CERATUM ALBUM.

White Cerate.

Take of Oil of Olives, four ounces in measure; of white Wax, four ounces in weight; and of Sperma-ceti, half an ounce in weight. Melt the whole together, and stir them well, till the Cerate is grown quite cold.

5. CERA-

5. CERATUM COMMUNE.

Common Cerate.

Take of yellow Wax, and Olive Oil, each one pound ; melt them together.

6. CERATUM EPULOTICUM.

Cicatrizing Cerate.

Take of Oil of Olives, one pound ; and of yellow Wax and prepared Calamy, each half a pound ; melt the Wax with the Oil ; and, as soon as the Mixture begins to regain a solid consistence, sprinkle in the Calamy, and stir the whole well, till the Cerate be grown quite cold.

7. COLLYRIUM VITRIOLICUM.

Vitriolic Eye-Water.

Take of white Vitriol, half a scruple ; and of Water, two ounces ; mix them, by dissolving the white Vitriol in the Water ; if found too sharp, add as much more Water.

8. EMBRO-

8. EMBROCATIO ASTRINGENS ET REPELL- LENS.

Astringent and repellent Embrocation.

Take of Sugar of Lead, one dram; and of Alum and White Vitriol, each half a dram. Powder, and then dissolve them in an ounce of Tincture of Red Roses. Dissolve also two drams of Terra Japonica, in an ounce and a half of rectified Spirit of Wine; and, having mixt the two Solutions, let them stand at rest some time, and then pour off the clear part of the fluid from the sediment.

9. EMBROCATIO DISCUTIENS COMMUNIS.

Common Discutient Embrocation.

Take of Camphor (powdered) two ounces; and of rectified Spirit of Wine, one quart. Mix them, that the Camphor may be dissolved.

10. EMBROCATIO RESOLVENS—OPODEL- DOCH.

Opodeldoch, or Resolvent Embrocation.

Take of the Spirit of Rosemary, one pint; of hard Spanish Sope, three ounces; and of

Camphor, one ounce. Digest the Sope in the Spirit of Rosemary, till it be dissolved; and then add the Camphor.

11. EMPLASTRUM ADHESIVUM.

Sticking-Plaster.

Take of the common Plaster, two pounds; and of *Burgundy Pitch*, one pound. Melt them together, that they may form a Plaster.

12. EMPLASTRUM AGGLUTINANS.

Agglutinative Plaster, commonly known by the name of *Ladies Sticking-Plaster*.

Take of *Isinglass*, four ounces; and of the compound, called *Turlington's Balsam*; or of either of those called *Balsamum Traumaticum* in the *London or Edinburgh Pharmacopeias*, one ounce. Melt the *Isinglass* with about two ounces of Water; and boil the Solution, till a great part of the Water be consumed; then add gradually to it the Balsam, stirring them well together; and after the mixture has continued a short time on the fire, take the Vessel off, and spread the plaster, while yet fluid with the heat, on silk, by means of a Brush.

13. EMPLASTRUM ATTRAHENS.

Drawing Plaster.

Take of yellow Resin, and yellow Wax, each three pounds; and of tried Mutton Suet, one pound. Melt the whole together, and, while it yet remains fluid, strain the mixture.

14. EMPLASTRUM DISCUTIENS VEL ANTI-RHEUMATICUM.

Antirheumatic; or, discutient Plaster.

Take of Burgundy Pitch, four ounces; and of Gum Euphorbium, one dram. Melt the Pitch, and then add the Gum powder'd, stirring them together, till they be incorporated, and form a Plaster.

15. EMPLASTRUM MERCURIALE.

Mercurial Plaster.

Take of Gum Plaster, one pound and a half. Being melted, and taken off the fire, add to it, of crude Mercury, eight ounces; of Venice Turpentine, one ounce; and of liquid Storax, half an ounce; all which should be previously well ground together in a mor-

tar, till the Mercury entirely lose its metallic appearance.

16. EMPLASTRUM ROBORANS.

Strengthening Plaster.

Take of common Plaster, two pounds; of Frankincense, half a pound; and of Dragons Blood, three ounces. Melt the common Plaster, and add to it the rest, previously powdered.

17. EMPLASTRUM E SAPONE.

Sope Plaster.

Take of the common Plaster, three pounds; and of hard Sope, half a pound. To the common plaster, liquefied by heat, add the Sope, and then melt the whole, that the mixture may form a Plaster; taking care that it do not grow too cold before it be formed into rolls.

18. FOTUS ASTRINGENS.

Astringent Fomentation.

Take of Oak Bark, one ounce and a half; and of the quenching Water belonging to a Smith's Forge, three pounds. Boil them together,

together, till two pounds may be strained off; which being done, add of Roch-Allum two drams.

19. FOTUS E CICUTA.

Hemlock Fomentation.

Take of dried Hemlock, two ounces; and of Water two pints. Put the Hemlock into the Water boiling; and, having continued the heat for some minutes, strain off the Fomentation through Flannel.

20. FOTUS COMMUNIS.

Common Fomentation.

Take of the Leaves of Southern-wood, or Lavender-cotton, of the tops of Sea-worm-wood, and of Camomile-Flowers, all dried, each one ounce; of Bay-Leaves, dried, half an ounce; and of Water, three quarts. After boiling a short time, strain off the Water.

21. FOTUS CONTRA SPHACELUM.

Fomentation for Mortifications.

Take of the common Fomentation, one pound; and, when heated to a due warmth, add of Spirit of Wine, more or less, accord-

ing to the exigence, not exceeding, nevertheless, two ounces; and of Spirit of Salt-Armoniac, one ounce.

22. GARGARISMA DETERGENS.

Detergent Gargle.

Take of Tincture of Roses, one pound; and of Honey of Roses, two ounces; mix them, that they may form a Gargle.

23. GARGARISMA CONTRA GANGRENAM.

Gargle for the malignant sore Throat.

Take of the pectoral Decoction, seven ounces; of the Honey of Roses, one ounce; and of Spirit of Salt, thirty drops. Mix them, that they may form a Gargle.

24. INJECTIO DETERGENS.

Detergent Injection.

Take of *Mel Egyptiacum*, one ounce; and add to it six ounces of Water, or a greater or less proportion, as occasion may make necessary. Mix them thoroughly well, by shaking them well together.

25. IN-

25. INJECTIO REPELLENS.

Repellent Injection.

Take of Rose-water, four ounces; of Sugar of Lead, two drams; and of white Vitriol, one dram. Dissolve the metallic Salts in the Rose-water, that they may form an Injection.

26. LINIMENTUM HÆMORRHOIDALE.

Liniment for the Piles.

Take of the *Linimentum Album*, one ounce and a half; and of strained Opium, one dram. Mix them well together.

27. LINIMENTUM OLEOSUM.

Oily Liniment.

Take of Calves-foot Oil, one pound; of Turpentine, two ounces; and of white Soap, three ounces. Mix them together with a gentle heat.

**28. LOTIO EPULOTICA, AQUA CALCIS
DICTA.**

Cicatrizing Lotion, or Lime-Water.

Take of Quick-lime, one pound; and of Water, one gallon and a half. Pour the Water gradually on the Lime; and after the ebullition is over, and the earthy part of the Lime has subsided, filter the fluid through paper.

29. LOTIO VITRIOLICA STYPTICA.

Vitriolic Styptic Lotion.

Take of Blue Vitriol, two drams; of Water, two pounds. Make a Solution, and filter for use.

30. PASTA CAUSTICA MITIUS.

Mild Caustic Paste.

Take of soft Sope, and fresh Quick-lime, equal parts. Mix them at the time they are to be used.

31. PASTA

31. PASTA CAUSTICA FORTIOR.

Stronger Caustic Paste.

To the Lime in the former, add an equal part of *Lapis Infernalis*, finely powder'd.

32. PULVIS CAUSTICA PLUNKETI.

Plunket's *Caustic Powder*, for *Cancers*, or *Carcinomatous Ulcers*.

Take of Crows-foot, which grows in low grounds, one handful, well pounded; of Hogs-fennel, three sprigs, pounded likewise; of crude Brimstone, three middling thimbles full; and of white Arsenic, the same quantity; all incorporated well in a mortar. Then make it into small balls, the size of a nutmeg, and dry it in the sun. In order to apply it, the balls must be bruised into fine powder; and mixt with the yolk of a fresh egg, and laid over the sore, covered with a piece of hog's bladder split; or the stripping of a calf, when dropt; which must be cut of the size of the sore, and smeared with the yolk of the egg. If it be applied to the nose or the lip, you must also take care that the patient do not swallow any of the humour. You must also take care not to lay the plaster too broad on the face, or near the heart.

It

It is hazardous to exceed the breadth of a crown (in such cases) but in the feet or legs, it may be laid as far as the sore goes. The plaster must not be stirred, till it drop off itself, which will be in a week; but must have a clean bandage twice a day.

33. UNGUENTUM ALBUM.

White Ointment.

Take of Olive Oil, one pint; of White Wax, four ounces; and of Sperma-ceti, three ounces. Melt the whole together with a gentle heat, and stir them very briskly, without ceasing, till they be fully cold.

34. UNGUENTUM AD PSORAM.

Ointment for the Itch.

Take four ounces of crude Brimstone, two drams of Sal Ammoniac, finely powder'd, and, with a sufficient quantity of Hog's-lard, work it up into an ointment.

35. UNGUENTUM BASILICON FLAVUM.

Yellow Basilicon.

Take of Oil of Olives, one pint; of yellow Wax, yellow Resin, and Burgundy Pitch, each

each one pound; and of common Turpentine, three ounces. Melt the Wax, Resin, and Pitch, with the Oil, over a gentle fire. Then, being taken off, add the Turpentine; and strain the mixture while it remains hot.

36. UNGUENTUM BASILICON NIGRUM.

Black Basilicon.

Take of Oil of Olives, one pint; of yellow Wax, yellow Resin, and common Pitch, each nine ounces. Melt the whole together, and strain the mixture off while hot.

37. UNGUENTUM COERULEUM FORTIUS,
VEL MERCURIALE.

Strong Blue, or Mercurial Ointment.

Take of tried Hog's-lard, two pounds; of crude Mercury one pound; and of the simple Balsam of Sulphur, half an ounce. Rub the Quicksilver with the Balsam of Sulphur, till it no longer appears distinct; then add, by degrees, the Lard made warm, and mix them carefully.

38. UN-

38. UNGUENTUM SAMBUCINUM.

Elder Ointment.

Take of Elder Flowers, full blown, four pounds; of tried Mutton-Suet, three pounds; and of Oil of Olives, one pound. Boil the Flowers, till they become almost crisp, in the Suet and Oil, previously melted together. Then press out the Ointment, from the feculent part.

Common Bougies.

Take yellow Wax, four ounces; Resin, three ounces; factitious Cinnabar, half an ounce. Melt them together, and when of a proper warmth, dip in your slips of linen, and roll it to the size you want.

Suppurative Bougies.

Take two ounces of Sticking-Plaster, one ounce of Quicksilver, half an ounce of crude Antimony, finely powdered. The Quicksilver must not be put in, till the plaster is of such a heat that is proper to make the Bougies. Stir it well, and then dip in the slips of Cambrick or fine Holland, three inches broad, and from six to ten inches long. A slip three inches broad will make four or six bougies. They must be rolled very smooth.

Medica-

Medicamenta Interna.

Internal Medicines.

1. BOLUS AD STRUMAS.

Bolus for the King's-Evil.

Take of burnt Sponge, one dram; of the Conserve of Elder, half a dram; and of the simple Syrup, two drams. Mix them, that they may form a Bolus.

2. DECOCTUM ALBUM COMPOSITUM.

Compound White Decoction.

Take of the greater Comfrey, and Tormentil, each half an ounce; and of Spring-water, three pints. Reduce the fluid to two pints, by boiling, and add, near the end of the coction, one dram of Cinnamon bruised; and to the fluid, after it is strained off, of calcined Hartshorn, of white Chalk, and of refined Sugar, each half an ounce.

3. DE-

3. DECOCTUM CORTICIS PERUVIANÆ.*Decoction of the Bark.*

Take of the *Peruvian Bark*, eight ounces; boil it in a sufficient quantity of Water, to strain off one gallon of the decoction.

4. DECOCTUM PRO ENEMA.*Decoction for a Clyster.*

Milk, ten ounces, coarse Sugar and Oil, each two ounces. Mix.

5. DECOCTUM SARSAPARILLÆ.*Sarsaparilla Decoction.*

Take of the *Sarsaparilla-root*, three ounces. Boil it in a gallon of Water, till half be consumed; and then strain off the Decoction.

6. EMULSIO ARABICA.*Gum Arabic Emulsion.*

Take of Sweet Almonds, one ounce; of Gum Arabic, half an ounce, and of Spring-water, two pints. Dissolve the Gum Arabic in Water, by boiling; and then, having blanched

blanched the Almonds, and pounded them well in a marble mortar, pour the Solution of the Gum Arabic gradually on them; stirring them together. After which, strain off the Emulsion (through a hair-sieve); and add to it, of simple Cinnamon-water, one ounce; and of white Sugar, one dram.

7. ELECTARIUM AD GONORRHEAM.

Electary for a Clap.

Take three ounces of Lenitive Electuary, three drams of Jalap in powder; a dram and a half of depurated Nitre; and, with a sufficient quantity of simple Syrup, make an Electary. Dose one dram and a half twice a day.

8. ELECTARIUM AD GONORRHEAM BALSAMICUM.

Balsamic Electary for a Clap.

Take four ounces of Lenitive Electary; two ounces of Balsam of Copaiva; an ounce of Rhubarb in powder; an ounce of Gum Guaiacum; and a like quantity of depurated Nitre; and, with a sufficient quantity of Syrup of Orange-peel, make an Electary. Dose the same as the former.

9. ELEC-

9. ELECTARIUM HÆMORRHOIDALE.

Electary for the Piles.

Take of Lenitive Electary, and washed Flowers of Sulphur, each equal parts; and of the simple Syrup, as much as may be sufficient. Mix them, that they may form an Electary.

10. ELECTARIUM CORTICIS PERUVIANÆ.

Electary of the Bark.

Take of the Peruvian Bark powdered, two ounces; and of the simple Syrup, six ounces. Mix them, that they may form an Electary.

11. HAUSTUS ANODYNUS.

An Anodyne Draught.

Take of Syrup *de meconio*, half an ounce; of Spring-water, one ounce; and of the alexiterial Spirit (of the *London Pharmacopeia*) two drams. Mix them, that they may form a Draught.

12. HAUSTUS CATHARTICUS.

A Purging Draught.

Take of the common Infusion of Sena, three ounces; of the Syrup of Buckthorn, one ounce; and of the spirituous Water of Caraway-seeds, half an ounce. Mix them, that they may form a Draught.

13. HAUSTUS EMETICUS.

An Emetic Draught.

Take of Ipecacuanha-root, one scruple; of Oxy-mel of Squills, six drams; of Spring-water, one ounce; and of proof Spirit of Wine, two drams. Mix them, that they may form a Draught.

14. HAUSTUS SOLUTIVUS SALINUS.

A Saline Solutive Draught.

Take of Glauber's Salts, one ounce; and of simple Cinnamon-water, eight ounces. Dissolve the Salts in the Cinnamon-water, that they may form a Draught. Instead of the Glauber's Salts, half an ounce of the *Sal Polychrest*, or of the *Selle de Seignette*, may be substituted.

Take of Glauber's Salts, one ounce; and of simple Cinnamon-water, eight ounces. Dissolve the Salts in the Cinnamon-water, that they may form a Draught. Instead of the Glauber's Salts, half an ounce of the *Sal Polychrest*, or of the *Selle de Seignette*, may be substituted.

15. MISTURA CONTRA DIARRHÆAM.

Mixture for a Diarrhœa.

Take of simple Cinnamon-water, eight ounces; and dissolve in it three drams of Gum Arabic, or Gum Senegal. Add then of prepared Chalk, six drams; of Peppermint-water, four ounces; of the Aromatic Volatile Spirit, two drams; and of Syrup of meconio, three ounces. Let them form a Mixture.

16. MISTURA FEBREFUGA.

A Febrifuge Mixture.

Take of Salt of Wormwood, two drams; of the Juice of Lemons, three ounces; and of simple Cinnamon-water, six ounces. Add the Lemon Juice gradually to the Salt; and, when the Ebullition that will ensue is over, the Cinnamon-water; and let them form a Mixture.

17. PILULÆ ETHIOPICÆ.

Ethiopic or Black Pills.

Take of crude Mercury, six drams; and of white Spanish Soap, and Resin of Gumacum, each half an ounce. Pound them together in a glass mortar, till the globules of Mercury

Mercury be wholly imperceptible; and afterwards add of the Sulphur *Auratum Antimonii*, half an ounce; and of the common Syrup, as much as may be necessary, to bring the whole to the consistence of a proper mass for Pills.

18. PILULÆ E CICUTA.

Hemlock Pills.

Take of the fresh Hemlock, as much as may be sufficient; press out the Juice, and let it be boiled, while fresh, without depuration (with a gentle heat in an earthen vessel, often stirring it, lest it burn) to the consistence of an extract. Let this extract (or more properly inspissated juice) be formed, with as much of the powder of the dried leaves of Hemlock as may be necessary for the consistence, into a mass for Pills; into which let the mass be afterwards made; allowing two grains for each Pill.

19. PILULÆ MERCURIALES.

Mercurial Pills.

Take of crude Mercury, five drams; of *Strasburgh Turpentine*, two drams; of the Cathartic Extract, four Scruples; and of

Y 2

Rhu-

Rhubarb in Powder, one dram. Grind the crude Mercury, first with with the Turpentine, till it be no longer distinctly perceptible; and then work them up with the rest into a mass. If the Turpentine be of too thick a consistence, it must be made thinner, by the addition of a little Oil of Olives.

20. PILULÆ E MERCURIO CALCINATO.

Pills of Calcined Mercury.

Take calcined Mercury, one grain; Thebaic Extract, half a grain. With simple Syrup make a Pill for one dose, to be repeated every night.

21. PULVIS ANTILYSSUS MEADIANA.

Dr Mead's Powder against the Hydrophobia.

Take of Ash-coloured Ground-liverwort, two ounces; and of Black Pepper, one ounce; beat them together into a compound Powder. After being bled to nine or ten ounces, a dram and a half of this Powder is to be taken four mornings successively, in half a pint of warm Cows Milk, and he must use the Cold Bath for a month.

22. PULVIS

22. PULVIS ANTILYSSUS MOSCHATA.

The Musk Powders for the Bite of a mad Dog, commonly known by the name of Sir George Cobbs, or the Tonquin Medicine.

Take of native Cinnabar, and factitious Cinnabar, each twenty-four grains; of pure Musk, sixteen grains; grind them together into an exceeding fine powder, and put it into a small tea-cup of Arrack, Rum, or Brandy. Let it be well mixed, and give it the person as soon as possible after the bite; a second dose must be repeated thirty days after; and a third must be taken in thirty days more. But if the symptoms of madness appear they must take one of the above doses immediately, and a second in an hour after; and, if wanted, a third must be given in a few hours afterwards. The above dose is for grown persons; to children, smaller quantities must be given in proportion to their age.

23. PULVIS E BOLO CUM OPIO.

Powder of Bole with Opium.

Take French Bole one pound; Cinnamon eight ounces; Gum Arabic and Tormentil Root, each six ounces; long Pepper, one

Y 3

ounce;

ounce; powder them very fine and mix them.

24. **PULVIS DIURETICUS.**

Diuretic Powder.

Take calcined Egg, or Oyfter Shells, two scruples, Nitre and any laxivial Salts, each ten grains. Mix them well in a glass mortar. The dose is 25, or 30 grains in half a pint of Barley-water thrice a day, and is excellent in anasarcaous and cedematous swellings.

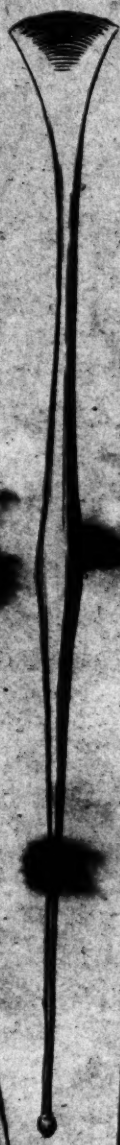
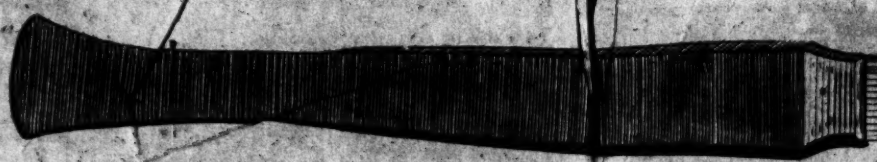
25. **SOLUTIO VEL TINCTURA MERCURII CORROSIVI SUBLIMATI.**

Solution or Tincture of Mercury Sublimate.

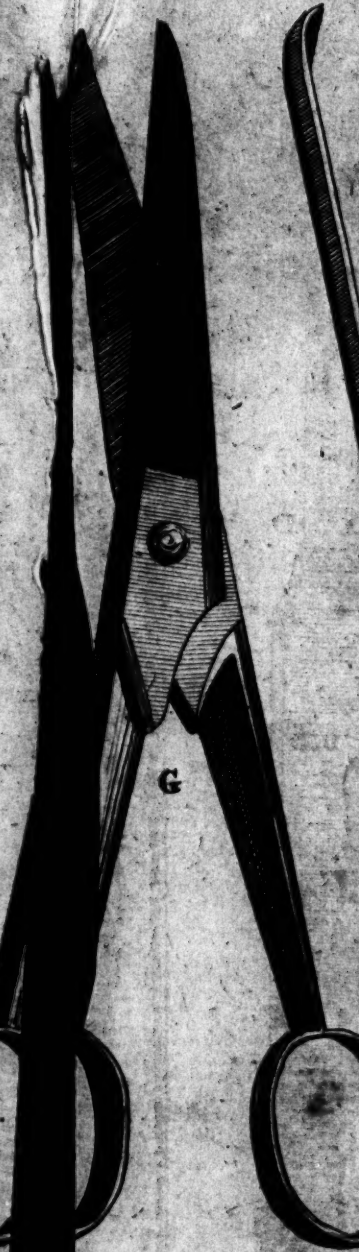
Take of Mercury Sublimate, ten grains; and of rectified Spirit of Wine, one pint. Powder the Sublimate; and, having put it to the Spirit, contained in a phial, shake them frequently together; and, in a short time, the Sublimate will almost wholly dissolve, and form a Tincture: which should be poured off from a very small quantity of sediment that will subside. The dose is one spoonful twice a day in half a pint of *Sarsaparilla Detoxican*.

Take inward Hole one pound
eight ounces; Gum Arabic and Tormentil
Root, each six ounces, long Pepper, one
ounce;

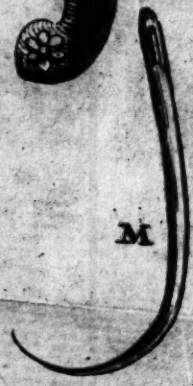
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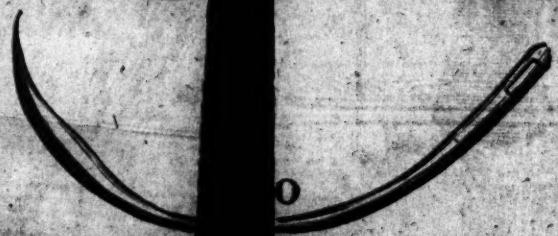
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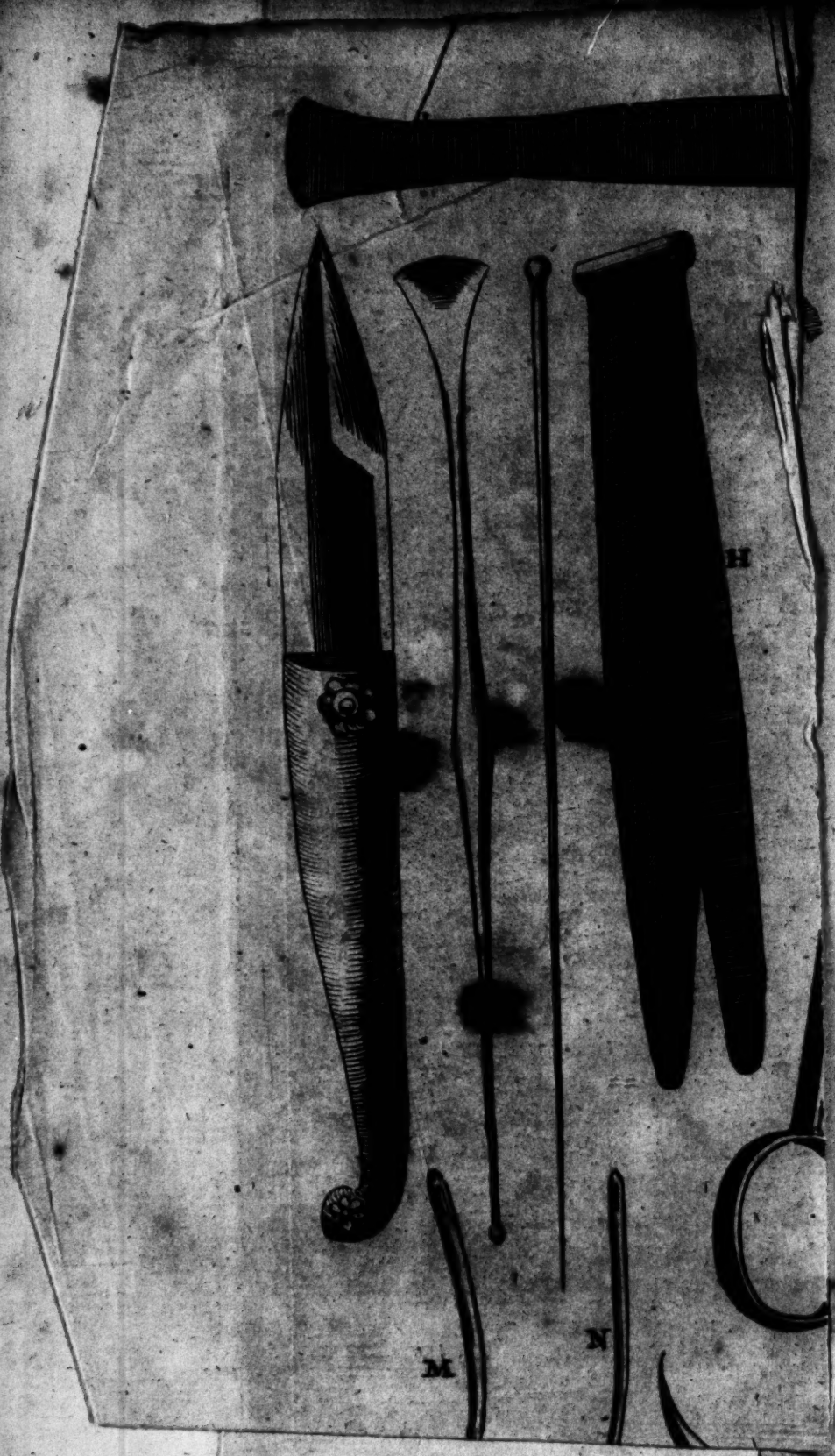
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TAB. I.





An EXPLANATION of the
 Figures in the Copper-Plates,
 which are added to illustrate the
 several Operations before described.

An Explanation of Tab. I.

A Represents a crooked *Scalpel* with an obtuse point or button for the operation of the Bubonocoele, to avoid injuring the intestines; serving also for enlarging an opening into the thorax, without wounding the lungs or intercostal blood-vessels. The handle of this and all other knives should be made of the lightest wood that can be procured, that the resistance made to the blade in dividing the parts may be better perceived by the hand.

B Denotes a common silver *Probe* with a globular point, and an eye armed with a ligature or skain of silk, which being spread with some balsam, or other medicines, may by this means be conveyed thro' a gun-shot, or other pervious Wound or Ulcer, which has two openings like a seton. Of itself it serves to examine the extent and course of wounds, ulcers, &c. for which reason it is form'd of the purest silver, that it may be easily flexible into any posture as may be judged most convenient. Some of these Probes are made with an half eye, and with a triangular sharp point, that lint may be

fixed in the former, or wound about the latter, and be thereby convey'd, either dry or armed with proper medicines, to the bottom of an ulcer or hollow part, &c.

C A small *File* for levelling the asperities of the teeth of their stumps, when they wound or irritate the tongue so as sometimes to threaten a cancer.

D Represents a round-edged *Knife*, fixed in a light wooden handle, and serving to cut for the Stone, and for most of the other operations which require a knife.

E A pair of crooked or *Probe-Scissars*, used chiefly in a *Fistula* of the Anus, and to divide the soft parts as they follow the probe: but as they pince or contuse the parts they divide, the knife is therefore much preferable where it can be applied.

F Exhibits a pair of *Spring-forceps*, with pickers at one end for extracting splinters, thorns, &c. and with teeth at the other end for holding fast any slippery membranous part or vessel, to remove dressings, &c. They are better made of steel well polished than of silver, for greater strength and neatness.

G Represents a pair of common strait *Scissars* for the cutting of plasters, compresses, bandage, skin, flesh, &c. and for any other purposes which require *Scissars*. Of these there should be several sizes in the chest or study; but those here represented for the pocket-case have usually

ly the shafts made of silver, as also have those called *Probe-Scissars* marked E.

H Gives us the figure of a pair of *Spring-pliers*, serving chiefly for anatomical purposes, to clear parts by stripping off membranous filaments, or by raising them so as to dissect them to more advantage. They are to be made of steel, and will upon occasion suffice for all the purposes of those before-mentioned F.

I A small silver or ivory *Probe* or *Stilet*, with a pretty large globular head at one end, and a small sharp point at the other. This with the next *Probe* marked

K, furnished with a thin flat edge at one end, serve for discovering a fissure in the cranium, and for other purposes, wherein their figure gives them an advantage over the preceding *Probe* marked B.

L Represents a strait double-edged *Bistery* or *Incision-Knife*, which may serve upon all occasions where a large lancet is required, as for cutting issues, making the first entrance into an abscess, &c.

M, N Represent crooked *Needles* for stitching up deep wounds of the skin, where the common, strait, triangular-pointed Needle cannot be so conveniently applied.

O, P Represent crooked *Needles* of different makes, serving for the tying up of any blood-vessels, as the crural and humeral arteries in ampu-

amputations, the spermatic vessels in castration, &c. That marked P is armed with a ligature or thread of a convenient size, which may be best made of the flaxen thread used by shoemakers, folded four, six, or eight of them together, and waxed; and this is not so apt to cut the vessels, as smaller and common thread. This needle P is of a middling size, not much too small for the largest vessels, nor much too big for the lesser: however, it will be convenient to have some of a size or two larger, and some of a size or two less, made of steel well temper'd, that they may neither bend nor break. The incurvation should be such, as to form a perfect segment of a circle, which will enable them to pass with greater readiness round any vessel. The convex surface of the needle tending to a point is flat, from whence it rises up obliquely on each side towards the concave surface in a ridge; so that the needle is in effect triangular half way from the point, from whence it grows flat towards the eye.

Q Represents a flat crooked Needle armed with a sizable thread, being sharp-edged on its convex and concave side: this is formed thus to make the suture of a tendon, and is large enough for the *Tendo Achillis*; for being thin and flat, it wounds but few of the fibres of the tendon, and passes more easily through so resisting a body. But as we have before observed, the ends of a divided tendon will unite without suture, if they are only retained together, by keeping the parts in a proper posture with compress and bandage.

R

Fig. 1.

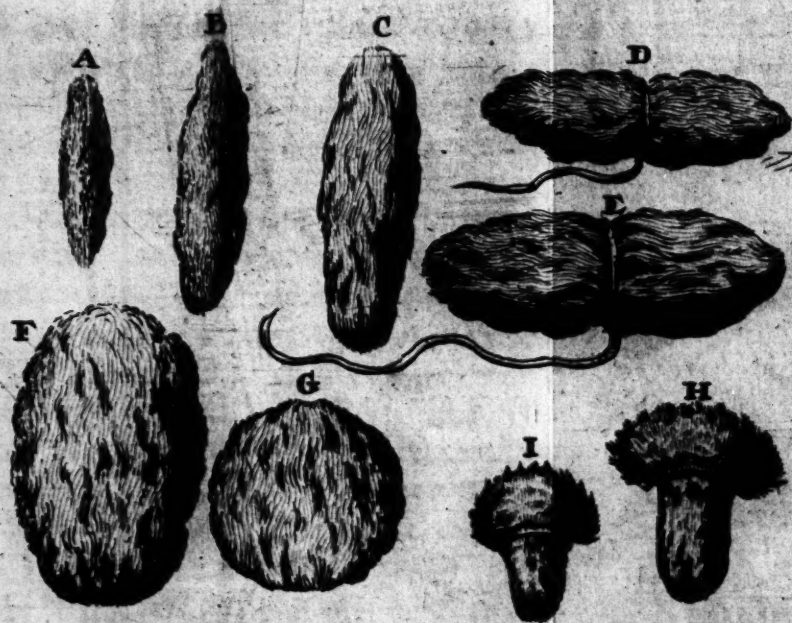


Fig. 5.



Fig. 4.

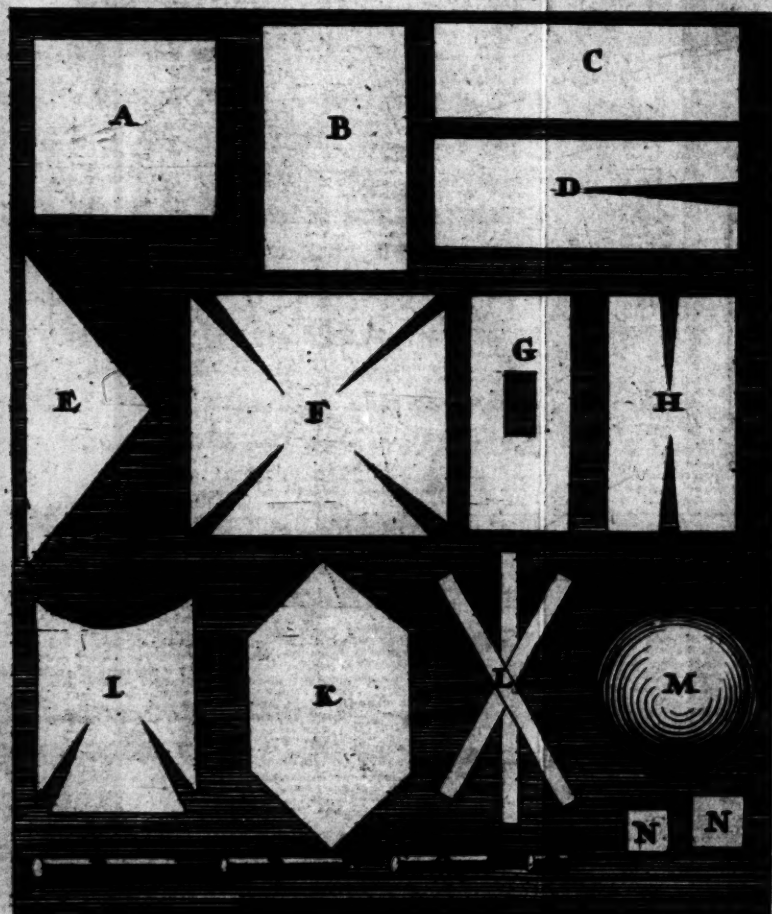
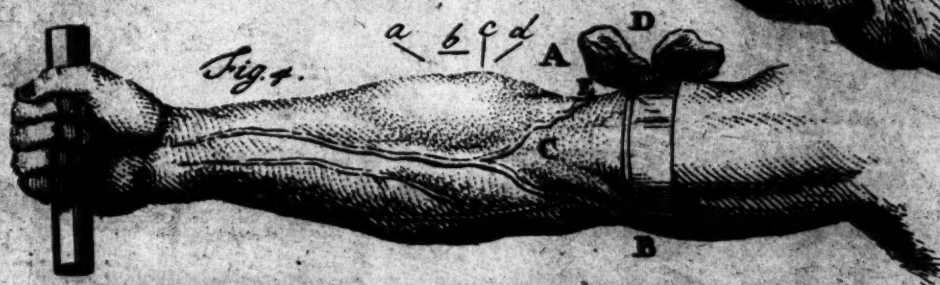


Fig. 2.

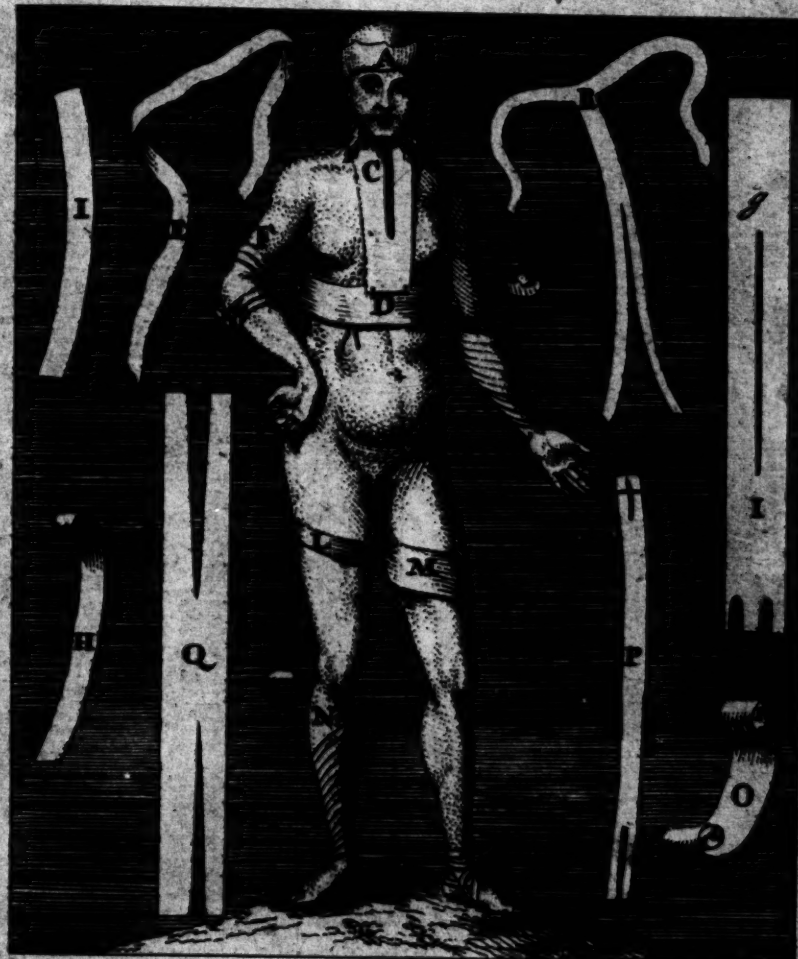


Fig. 3.

Fig. 1.

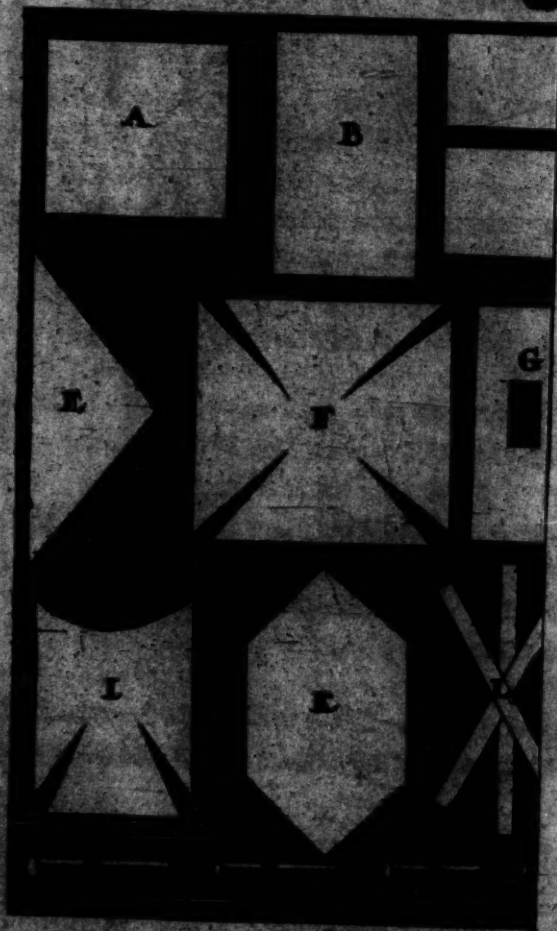
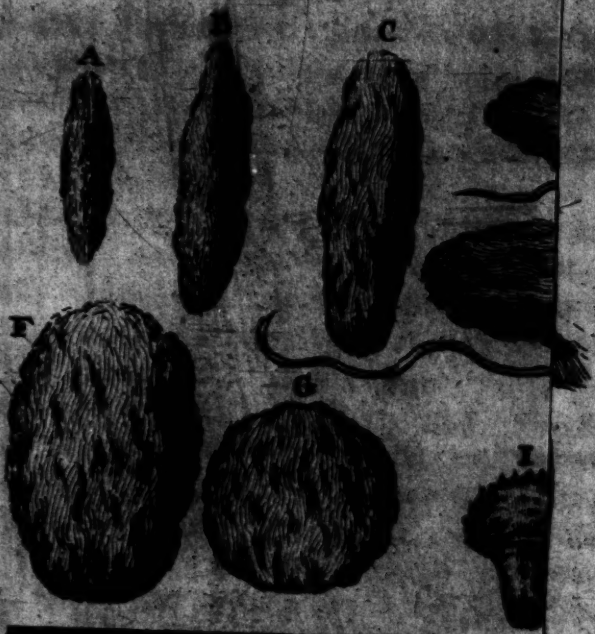


Fig. 2.

R A crooked *Needle* of the smallest size, armed with a ligature for taking up the lesser arteries, as those of the skin in opening an abscess, or of the scalp in the operation of trepanning, &c.

S Represents a round crooked *Needle* with a flat point for the same purposes, but less convenient than those preceding; though it is stronger, but more apt to slip in the holding of it.

T Denotes a silver or gold *Needle* armed with a steel point, which serves to introduce the rest in making the twisted suture for the hare-lip (*vid. Tab. C. Fig. 8, 9.*); afterwards the point is secured by fixing upon it a bit of wood, cork, &c. but those who value not the expence of the needle cut off the point.

U Denotes a kind of *Needle* like a larder for the same operation of the hare-lip, serving to introduce a gold or silver wire: but as this makes a larger wound, and confuses the parts more than the former, it seems less convenient.

An Explanation of Tab. II.

Fig. 1. Represents lint made up into various forms. A, B, C dossils of lint of various sizes. D, E the same dossils secured round the middle by a thread for the more easy extracting them. F an oblong pledget. G a circular pledget. I, H tents of different sizes. These refer to Q. 6. p. 5.

Fig. 2. Gives a view of various compresses. A B denotes a square and an oblong compress, which

which are the forms most frequently used. C D longitudinal compresses, the first serving to fill up inequalities; and the latter being slit up to the middle at one end, adapts it to the declivity of some limb, wrapping over each other as in the foliated bandage for a fracture of the leg. E a triangular compress being of a great thickness, and applied in ruptures to prevent the intestines or omentum from subsisting through the rings of the abdominal Muscles. F a compress in form of a *Malta* cross, cut in this shape to surround or wrap over the extremity of a limb that has been amputated. G a perforated compress, having a square, round, or oval aperture to transmit the cannula in bronchotomy, or to give access to a wound, &c. H a compress divided at each end to near the middle, to facilitate its application round any limb whose surface is unequal, by folding the ends over each other. I a compress adapted to the humerus or shoulder wounded or luxated; being slit up at each lower angle towards the middle, the better to adapt it to the globular figure of the part. K represents the rhomboidal compress, which being divided in the middle forms two scutiform compresses. L represents the stellate or sextile compress, composed of three longitudinal ones crossing each other, and sewed together in the middle, which is sometimes applied upon an aneurism or varix, or over the end of a stump; for being thick in the middle, it may compress or stop up the opening of any vessel, or make resistance where a part is too much relaxed. M a spheroidal compress or ball, which being cut in the middle forms two hemispherical compresses: the former or spheroidal compress serving to fix under the axilla in a luxation of the humerus,

humerus, and the latter or hemispherical compress serves to fill up the palm of the hand, and stretch out the bones of the metacarpus in a fracture or luxation of them, &c. N N represent small square compresses to be applied after bleeding in the arm or foot. O O P P small cylindric compresses sometimes used to fasten the thread upon in tying up vessels, and in making the sutures of tendons to prevent the thread from distressing or cutting through the parts.

Fig. 3. Represents a view of the most general bandages both simple and compound. A the great kerchief or general bandage for the head, represented more at large in *Tab. XIV. Fig. 1.* C D represent the napkin and scapulary, or a general bandage in most disorders of the thorax and abdomen. The scapulary marked g is so called from resting upon the shoulders, and consists of a piece of linen of two or three feet in length, and six or eight inches in breadth, slit in the middle to transmit the head, and fastened each end of it to the napkin D, which should be long enough to extend quite round the body. The napkin is to be folded three or four times together to make it of a convenient breadth for securing the dressings. F represents the manner of applying the fillet after bleeding in the arm. G represents the manner of applying the fillet after bleeding in the foot, both which may be seen more at large in *Tab. XIV. Fig. 1.* H the deloire or spreading spiral Bandage applied to the arm; N the same applied to the leg. E denotes a common fillet, loose, and to be applied after bleeding in the arm or foot, &c. I a short fillet with a thread fastened to the end for making the circular

cular or annular bandage. H a single-headed roller to be applied with one hand. O a double-headed roller to be applied with both hands, and in different directions. Q a four-headed bandage made by flitting it up at each end, which may be repeated two or three times more upon occasion on each side. P a small retentive bandage slit up at one end, and furnished with an opening in the other end, serving to secure the dressings upon a finger, thumb, penis, &c. It will also serve for an uniting bandage, when made of a greater length, to retain together the longitudinal lips of a wound instead of a suture. I, g, the scapulary bandage, which is supported upon the shoulders before and behind, as at C in the *Figure I.* R the T bandage of *Heliodorus* made of two simple bands sewed together, being applied round the waste to retain the dressings after cutting for the stone, and in disorders of the anus and perinæum; or in an inverted posture like the napkin and scapulary for dressings of the thorax. Sometimes there are two pieces sewed on to the wasteband at a little distance from each other, and then it is called a double T bandage.

Fig. 4. Represents the veins commonly opened for bleeding in the arm. A D the ligature applied with a slip-knot to compress the veins, and render them turgid. C denotes the median vein, under which the tendon of the biceps muscle usually lies. B the basilic vein, which runs up on the inside of the arm towards the elbow, having usually the cubital artery and brachial nerve seated underneath it. E the cephalic vein, which ascends along the side of the biceps muscle on the outer part of the arm, but having no tendon, nerve or artery

artery seated under it, may be therefore opened with more safety by an unskilful hand; only being much less than the two former, it commonly discharges but little blood, and seldom in a full stream. *a b c d* represent the course or direction of the orifice to be made by the lancet in the vein, namely, either oblique, which is most preferable, ascending or descending, (*a d*); longitudinal, according to the course of the vein (*b*); or transverse (*c*). For it is observable, that wounds made obliquely with respect to the course of the fibres, heal more readily, and with a less scar than those made transversely; because in the latter case the fibres contract themselves more, and do not apply their ends to each other with so large a surface: but if the orifice is made longitudinal according to the course of the vein, the sides collapse together by the touching of the skin, and the blood does not flow so freely, unless the skin be relaxed by bending the arm.

Fig. 5. Represents the proper part of the sclerotica, where the couching needle is to be introduced for depressing a cataract. A the couching needle, held like a pen in the right hand, with its point introduced near the center of the apparent white part of the eye. B the point of the needle appearing behind the pupil, while the eyelids are held open by the fore-finger and thumb of the left hand, which method is rather preferable to the use of the speculum oculi. The lower fingers of the right hand are supported on the patient's cheek to sustain the instrument, while it is entered at about the distance of half a quarter of an inch from the cornea.

An

An Explanation of Tab. III.

Fig. 1. Represents a lancet with a short blade *ab*, as that can be more commodiously guided, forming a large angle, or with broad shoulders towards the point *ac*, which is by the *French* termed a barley-grain point, being very commodious for opening of the largest and most superficial veins.

Fig. 2. Is a lancet with narrower shoulders and a still shorter blade, forming a more acute angle towards the point, being called by the *French* an oat-grained point, being more suitable than the former for the smaller and deeper veins.

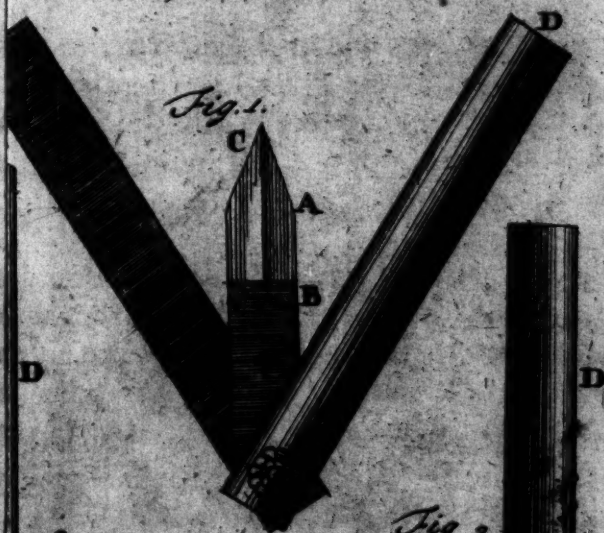
Fig. 3. Represents a smaller oat-grained lancet, extremely commodious for bleeding easy in a skilful hand, and when a vein does not easily appear.

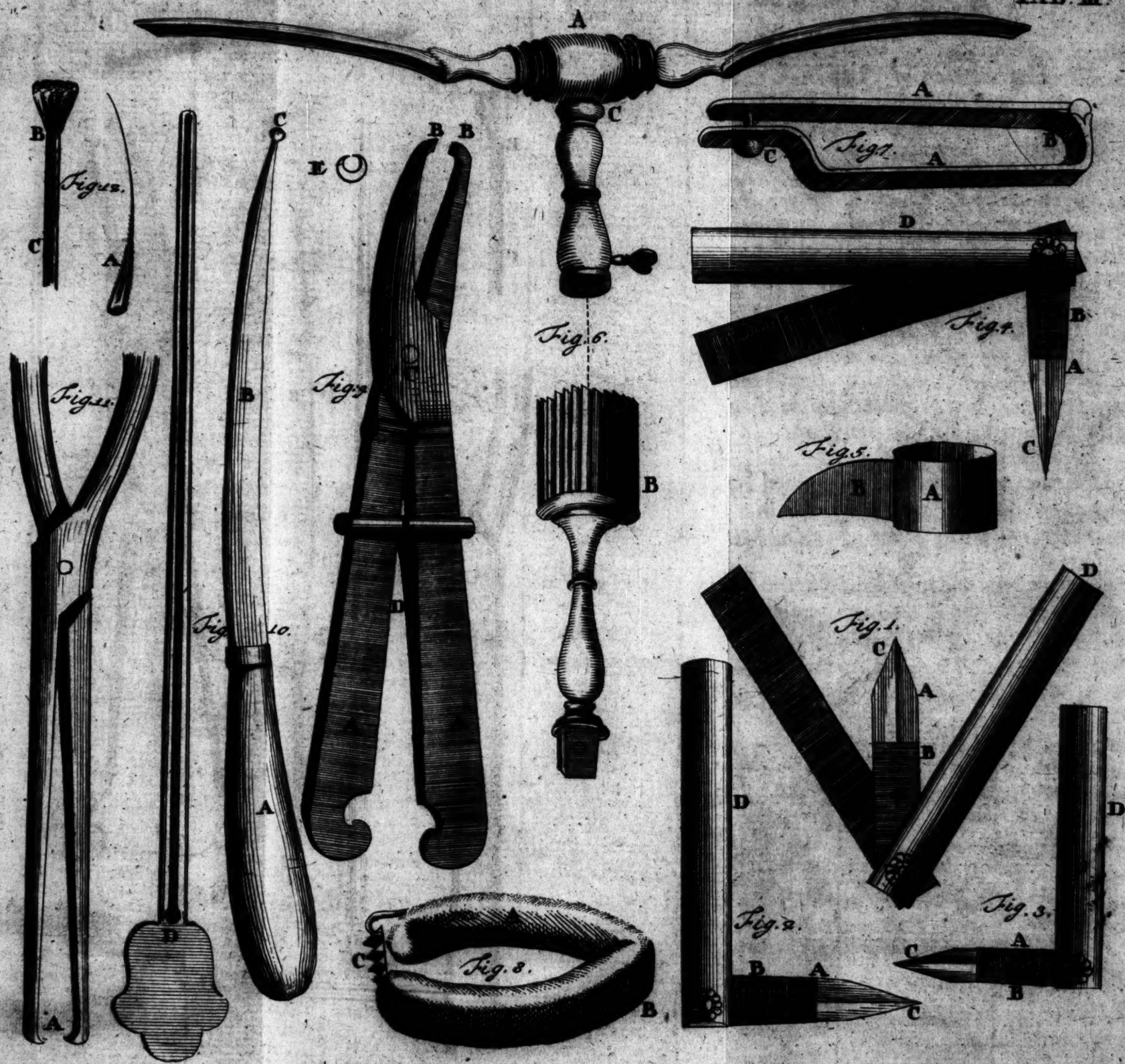
Fig. 4. Represents one of the most acute-pointed lancets, called by the *French* a serpentine point: being useful for bleeding easy in a skilful hand, and to open very small veins in an infant, under the tongue, in the white of the eye, &c.

Fig. 5. Represents a small abscess lancet fixed in a ring, so as to be commodiously concealed in the hand, when there is occasion to make an incision, under a pretence of healing the part, in a timorous patient who will not admit of the knife.

Fig. 6. Represents the trefine, so called by *Woodal* from its having three ends, and prevails among us more than the trepan, as it may be
more

TAB. III.





more conveniently held or directed to press more on one side than the other, according as the thickness of the bone may require. A C the handle of the trefine, which serves the purpose of an elevator, into which is fixed the crown B, which is made cylindrical, or at least very nearly so, instead of being conical like the crown of the trepan, which greatly expedites the working of the instrument, which being performed more slowly, and with more exactness and regularity than the trepan, is not in danger of wounding the brain in a careful hand; to avoid which, the crown of the trepan was at first formed of a conical shape. So that what in this respect seemed to be a very great improvement upon the ancients about an hundred years ago, is at present thought rather an incumbrance and impediment in a skilful and careful hand. However it must be confessed, that the trepan still prevails in most other parts of *Europe*; though the trefine is preferred by the most expert surgeons here at *London*.

Fig. 7. Represents a steel instrument called a yoke, to be wore upon the penis for an incontinency of the urine, being first covered with velvet: it opens with a hinge B at one end, and is fastened with a screw C at the other, and must be taken off when the patient has a call to make water. The compressure upon the Urethra may be lessened or increased by letting out or shortening the screw.

Fig. 8. Represents a yoke of another form cloathed fit for use. A A the two plates or arms covered. B the hinge by which the two arms are joined. C a graduated ketch with a hook, where-
Z by

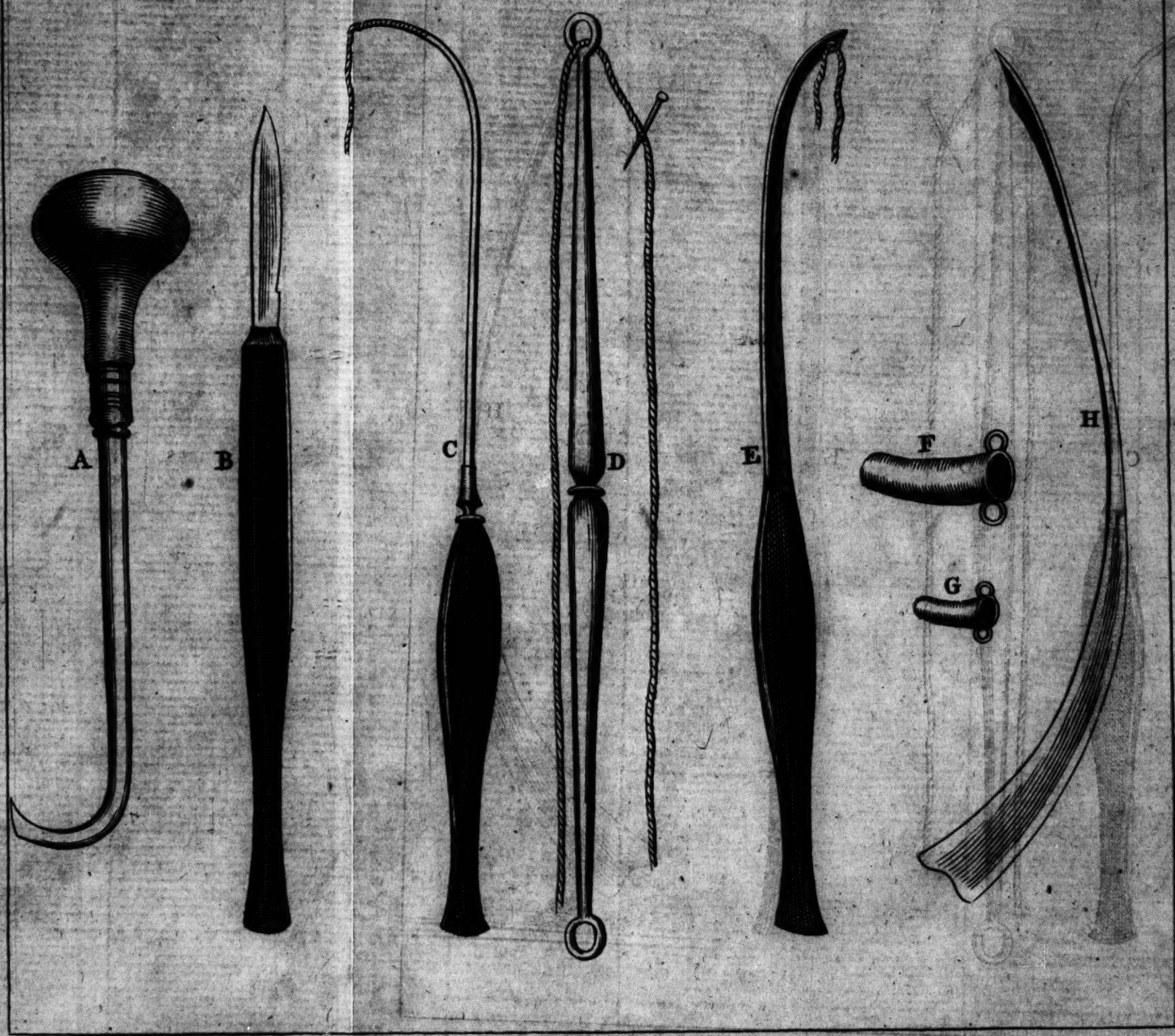
by the instrument may be contracted or enlarged at pleasure.

Fig. 9. Represents a needle-holder. A A two flat shanks or handles. B B the two sides of its mouth grooved for keeping the needles firm, C the hinge. D a spring which keeps the handles asunder, with the mouth open B B, until the sliding ketch E is thrust towards A A. This instrument holds a needle as secure as any, and more securely than most other tenacula.

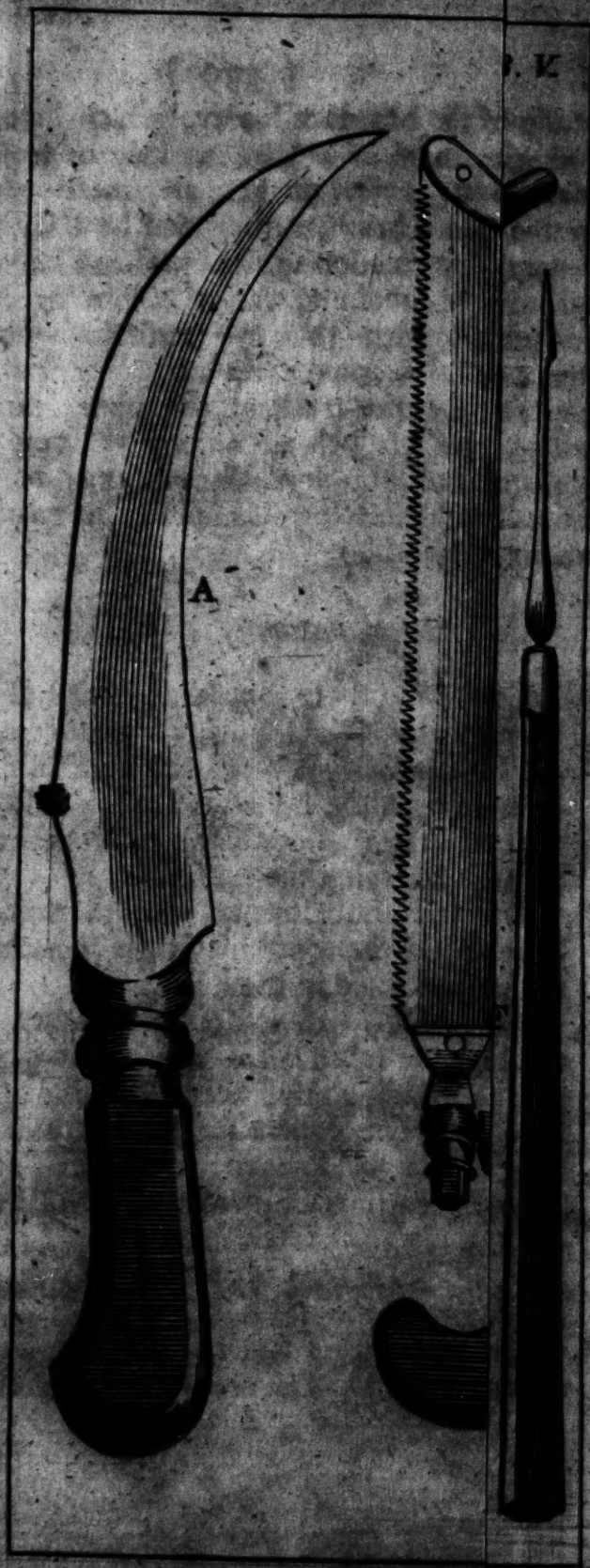
Fig. 10. Represents a bistory with a grooved director for enlarging wounds, &c. A the handle of the knife. B the blade. C a button at its point. D the handle of the director, having a hollow groove; a transverse section of which is represented at E, so that when the button of the knife C has once entered the opening of the groove near the handle D, it cannot slip out in opening a sinous ulcer, (a fault to which the common bistory and director are liable) until it passes out at the other extremity of the director.

Fig. 11. Represents the blades of a pair of strong forceps for extracting bullets. In the mouth A there are two small sharp teeth on each side, which apply close together when shut. The forceps here represented may be introduced into a wound safely when shut; and the blades being opened immediately behind the bullet, the teeth piercing into the lead, may have sufficient hold to bring it out, though they are not advanced so far as the largest part of it.

Fig. 12. Represents a scarificator for the eyes made







made of the beards of barley, which being rough like the teeth of a saw, as may be seen in that marked A, several of them are therefore tied together into a brush, represented by B C. But although scarification of the eyes may be very useful in an ophthalmia, yet it cannot be so safely performed with this eye-brush as with a fine steel rasp of a convex figure, as in *Tab. XVII. Fig. 18.* for the teeth of the barley-ears being brittle, are left behind among the very sensible fibres of the albuginea, so as rather to increase the inflammation, or do as much hurt as the evacuation does good.

Explanation of Tab. IV.

- A, A Perforator, to break an artificial passage through the Os Unguis, in the operation for the *Fistula Lachrymalis*. B, A small incision-knife to open the *Sacculus Lachrymalis*, in the same operation. — C, the bent probe with a ligature for tying the tonsils.
 D, The iron instrument, used in making the knot round the tonsil, which is represented by the pin, inclosed in the knot.
 E, The needle with a double ligature to pass through the tonsil when the basis is large, one part of which is tied above and the other below. F, The canula for the *Empyema*. G, The canula for *Bronchotomy*. H, The bent razor for cutting the *Mastoideus Muscle*.

Explanation of Tab. V.

- A, The amputation knife. B, The Saw. C, The catlin. D, The trocar in its canula, used
 Z 2 for

for making the puncture in the bladder thro' the Rectum in suppressions of urine. E, The canula of that trocar represented with the holes through which the ribbands pass that fasten it on. F, The small knife for cutting the Iris.

T A B L E VI.

The Instruments for Aneurisms.

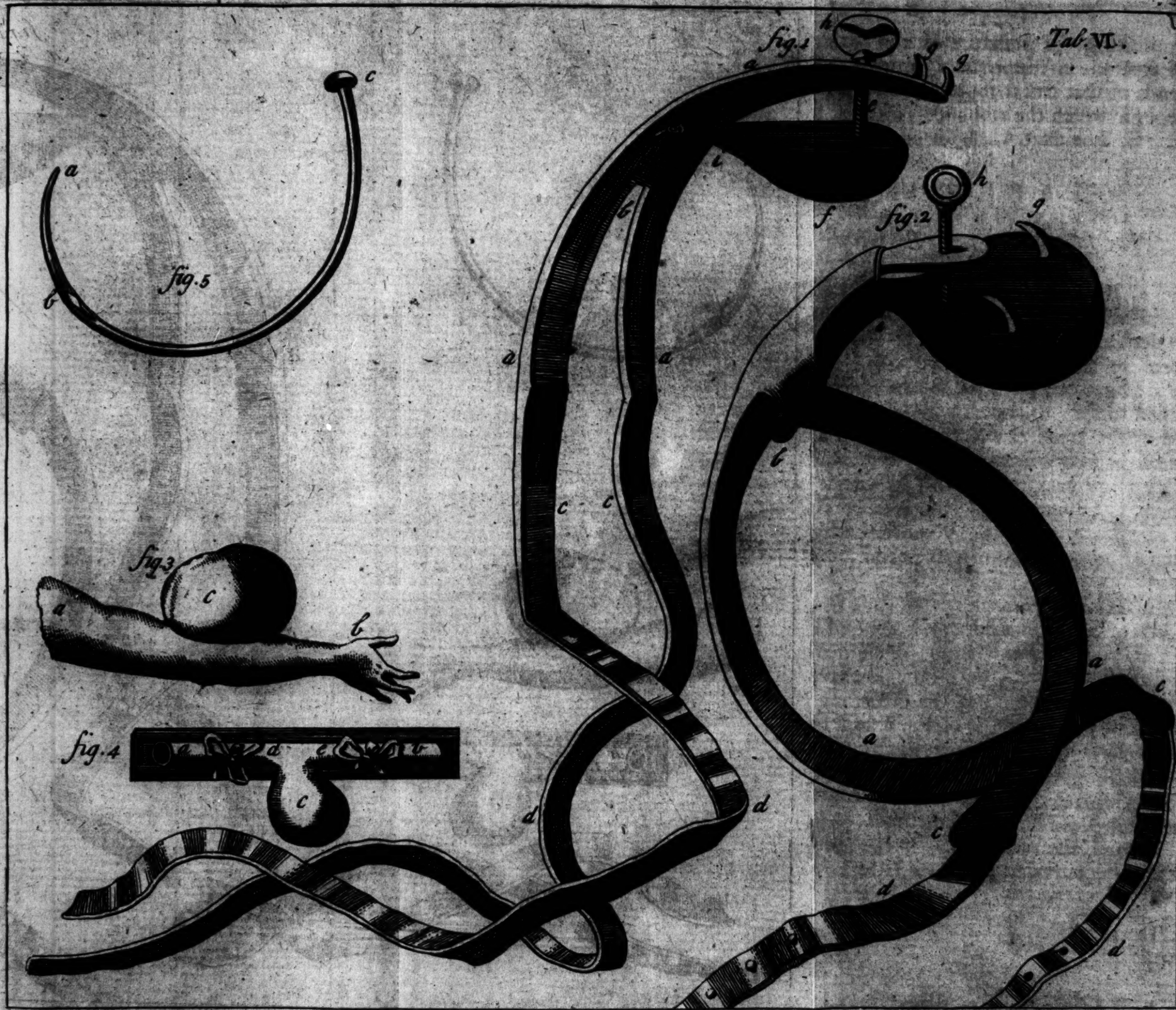
Fig. 1. Is an instrument designed for preventing and curing Aneurisms by compression; *a a a* denote the plate of iron or steel, adapted in form to the flexure of the arm; *b* its fissure; *c c* ligatures fastened to the ends *a a*, and extended to *d d*; *e* denotes a moveable steel plate joined by the hinge *i*, and covered with a bolster of cotton or silk at *f*, to be fixed upon the Aneurism. *g g* are two small hooks by which the instrument is fastened upon the arm by the ligatures *c c d d*. *b* is a screw by which the plate and cushion *e f* are pressed down upon the tumor.

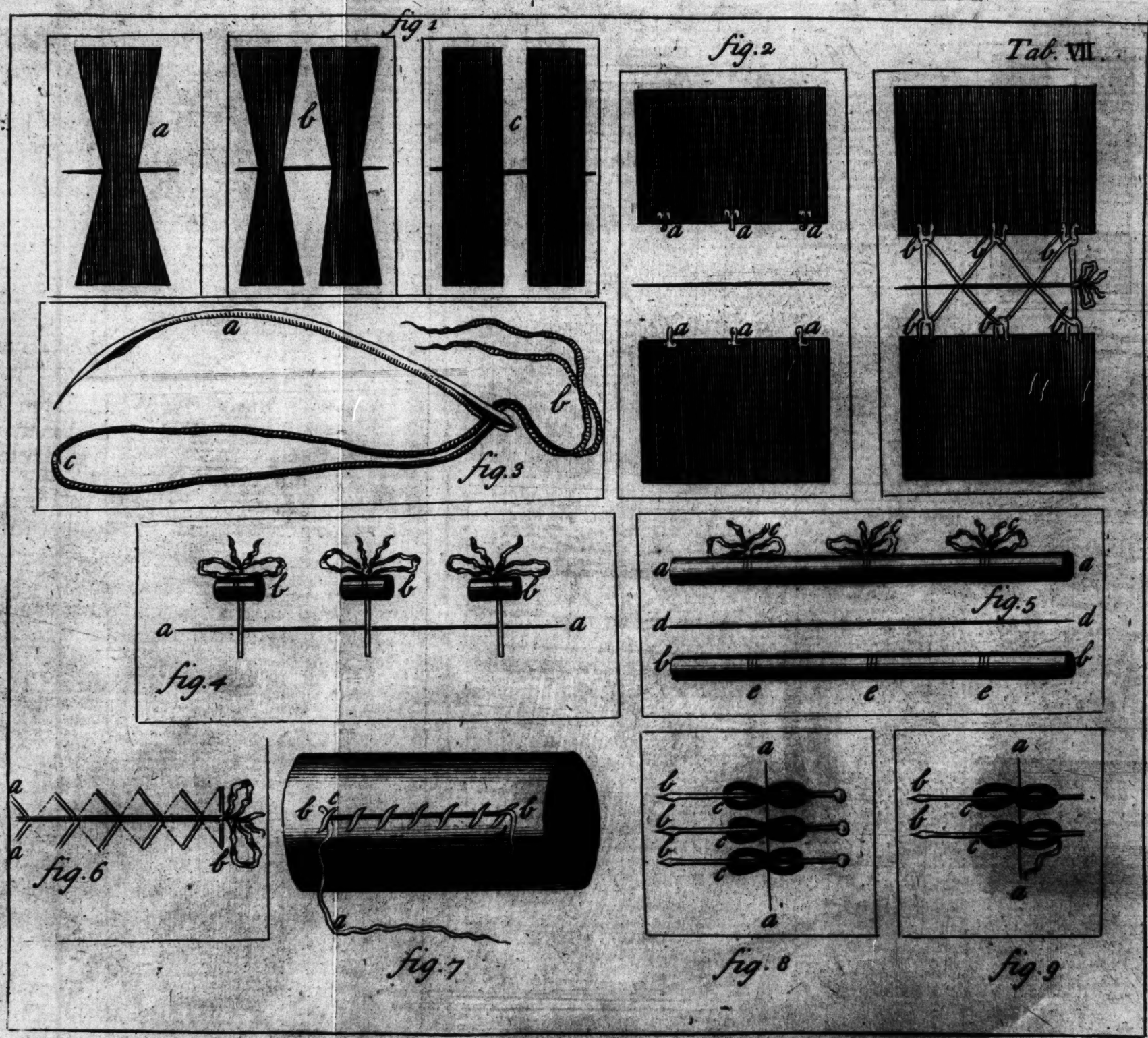
Fig. 2. Is an instrument of the same kind with the former, but of a different shape. Here the plate and bolster *e f* are larger for bigger Aneurisms than the former. Its parts and explanatory letters correspond to those of the preceding figure.

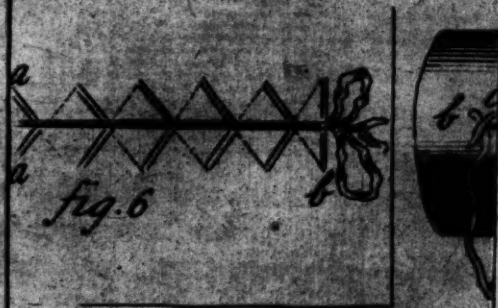
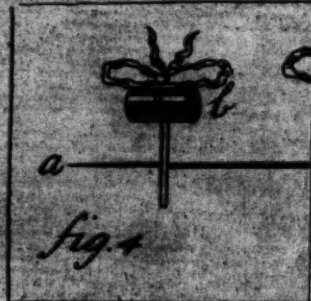
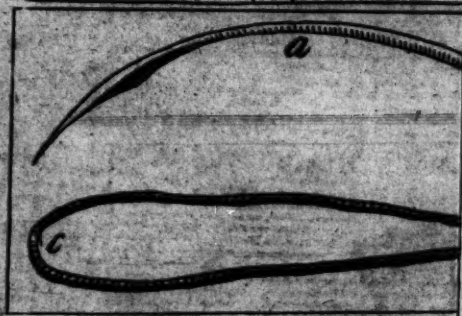
These instruments are to be applied for restraining the enlargement of an incipient Aneurism, or for compressing those which are not very large, which by means of this instrument and a strengthening plaster, are sometimes compleatly cured without the operation. In the application of them the incurvated part *a a a* is to be applied

Tal. VI.









so as to transmit the elbow, while the compress or cushion marked *f* comes over into the flexure of the arm upon the Aneurism; and the whole instrument is then to be secured by the ligatures *cc*, *dd*, fastened to the hooks *gg*.

Fig. 3. Represents a large Aneurism in the joint or flexure of the arm; *a*, *c*, the arm; *b* the Aneurism.

Fig. 4. Is an obtuse-pointed needle for conveying a ligature round the artery in the operation for an Aneurism, and to suppress hæmorrhages. *a* is the obtuse point, *b* the eye of the needle which transmits the thread, *c* the head or handle which may be more commodiously made flat, according to M. *Garengeot* about the breadth of one's thumb.

Fig. 5. Exhibits the manner of applying the ligatures above and below the Aneurism in the operation for that disorder. *a*, *b*, the artery, *c* the Aneurism, *d*, *e* the ligatures above and below the Aneurism.

T A B L E VII.

Fig. 1. Exhibits the manner of uniting wounds by the dry suture, that is to say, with sticking plasters applied to the skin, so as to retain the wounded lips close together. *a* denotes two sticking plasters without indentations, *b* denotes two plasters of the like kind indented to expose the lips of the wound to view, and make way for the discharge of its matter, as well as for the appli-

ation of medicines; *c* a single plaster of the like kind.

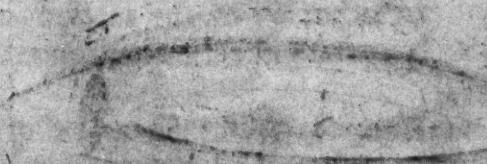
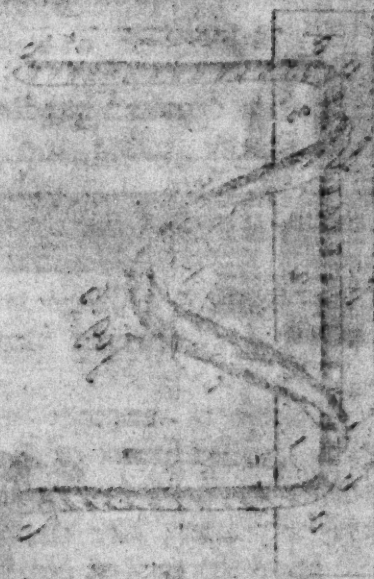
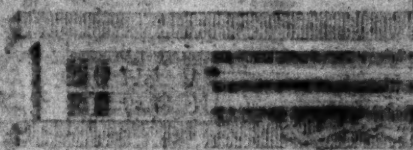
Fig. 2. Exhibits another manner of making the dry suture by sticking plasters, used by the ancients, which are fastened together by hooks and eyes *bbb*, or by a string drawn through them in the manner represented by *aaa*; and this method has the advantage of the former, inasmuch as by shortening the string, the lips of the wound may be more closely approximated without removing the sticking plasters.

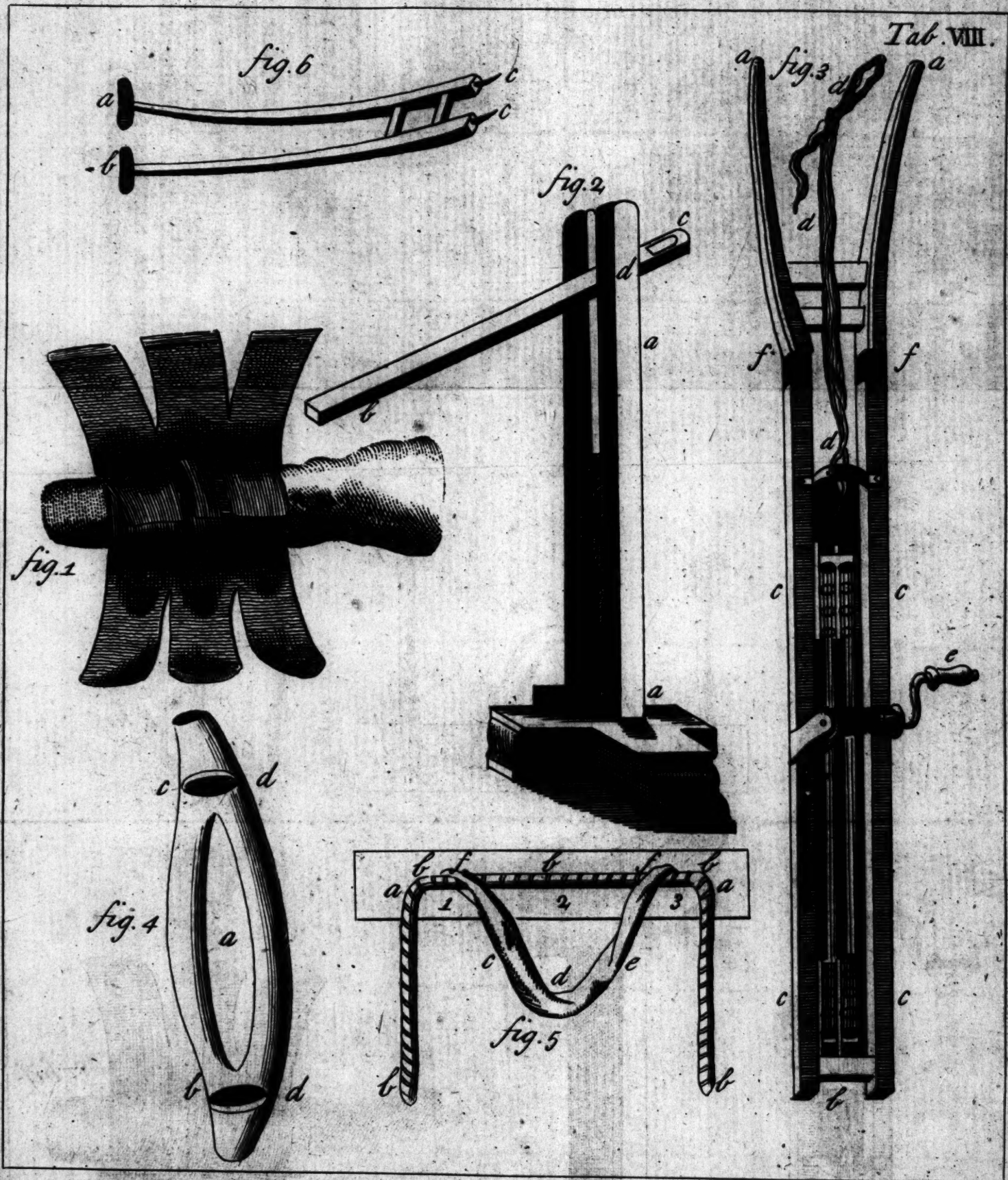
Fig. 3. A large crooked needle, with a double thread, to make the quilled and other sutures in large wounds. *a* the needle arched, *b* the double thread, *c* the bow end of the thread.

Fig. 4. *aa* denotes a large transverse wound united by a triple interrupted suture *bbb*.

Fig. 5. Represents another transverse wound united by the quilled suture of *Palfinus*; *aa*, *bb* are two cylindrical rolls of silk or linen spread with some cerate or plaster, *ccc* the slip-knots of the thread tied upon the roll of emplaster on the upper lip of the wound, while the other roll that lies upon the other lip of the wound is intercepted by the bow end of the threads *eee*.

Fig. 6. Represents the suture of *Celsus* (*lib. 7. cap. 16.*) for performing the operation of *Gastro-raphia* in wounds of the abdomen. But this method is at present out of practice, as it too much confines and inflames the lips of the wound; *aa* the







the stitches traversing each other, *b* the ends of the threads tied in a knot.

Fig. 7. Represents the glover's suture, made for wounds of the intestines; *a* the thread, *bb* the wound of the intestine, *c* the beginning of the suture, *d* the end of the suture fastened by a knot.

Fig. 8, 9. Represent the twisted suture made for uniting the hare-lip and other wounds, being made with one, two, three, or more needles, according to the length of the wound; *aa* the wound, *bb* the needle passed through the lips of the wound, *cc* the thread twisted round the needles.

TABLE VIII.

Fig. 1. Represents the foliated bandage to be applied in compound fractures. This bandage consists of eighteen leaves, nine on each side, the innermost being shorter than the rest. These leaves are applied obliquely over each other, those in the middle first, and afterwards those at each end.

Fig. 2. Represents the machine commonly called the ambe of *Hippocrates*, formerly much used for reducing dislocations of the humerus; it consists of the fulcrum *aa*, to which is fastened the moveable lever *bc*, joined to each other by a sort of moveable articulation *d*. In using this instrument, the dislocated arm is fastened to the lever *bc*, by inclining which the arm is at the same time extended, while the head of the humerus is thrust into its place by the end *c*.

Fig. 3. Is a machine contrived by *M. Paine*, for reducing luxations of the humerus, and of other joints; *aa* represent two arms, by which the patient, and particularly the scapula, is held firm from giving way in the extension; *b* the other end of the instrument resting upon the ground or floor; *cc* pulleys of the machine; *dd* the rope, by winding up which an extension is made; *e* the handle, by turning which the rope is drawn tight, and extends the limb; *ff* the part where the two horns are joined to the body of the machine.

Fig. 4. Denotes a retinaculum or supporter to be used in luxations of the humerus. *a* an opening or slit in the machine, which is made of strong ticken lined with leather; *bc* the shape of it at each end, *dd* two apertures through which the two legs or horns *aa* of the preceding instrument are transmitted.

Fig. 5. Represents a particular sling of *M. Petite*, proper to extend luxated limbs. *aa* the part made with leather, *bbb* a filken ligature sown to the leather in three places, at 1, 2, 3; the part *aa* is fastened round the arm; *cde* is a strong loop fastened to the filken ligature at *ff*, so as to be moveable.

Fig. 6. Is an instrument recommended by *M. Petite* for the reduction of a luxated femur when it is dislocated forward. It is fastened at *ff* into the machine *Fig. 3.* instead of the two arms *aa*; the head *a* is applied to the os ilium, and the other *b* to the middle of the thigh; but *cc* are fixed into the machine at *ff*, *Fig. 3.*

By

By this contrivance of *Petite* there is a counter extension made at the same time, to retain the patient while the limb is extended. Thus for the reduction of a dislocated humerus, the arm is first put through the opening *a* of the machine, *Fig. 4.* so as to make one end *b* come over the breast, and the other end *c* across the back, while the two holes *d d* transmit the two legs *a a* of the machine, *Fig. 3.* while the other end of the machine *b* is lodged upon the ground. In this machine there are several pullies *cc, cc,* as in the polyspaston of *Tab. I.* round which pullies passes the rope *dd* wound up by a handle *e.* But that the arm may be better extended, he uses a peculiar sling *aa, Fig. 5.* made of soft and double leather, fourteen inches long; this he fastens strongly round the lower part of the *os humeri,* a little above the elbow, the skin being first pulled upwards: it is to be kept firm upon the limb by the means of a silken cord, three quarters of an ell long, sewed in a particular manner to the leather of the sling, and to be fastened by a knot at the two ends *b b:* to this silken cord is fastened another sling *cde,* by two moveable loops *ff,* to which is to be annexed the rope *ddd,* which passes round the pullies of the machine. The apparatus being all rightly fitted, the assistant is order'd to wind up the rope by the handle *e, Fig. 3.* the rope becomes by that means stretched, and the arm to which it is fastened is gradually extended. In the mean time the surgeon directs the head of the humerus with his hands, that it may again obtain its natural place, which it very often does of its own accord without further assistance.

But to apply this machine for reducing a dislocation of the thigh forward and downward, or backward and upward, the support *Fig. 4.* is not required to be so broad, and it may be made without the opening *a*, as the thigh is not to be transmitted through it; but the middle thereof is to be applied to the tubercle of the ischium, one end being folded behind, and the other before. The patient is to be placed on his sound side, that the luxated thigh may lie upwards; but the machine itself is to be placed between the thighs, the knee of the distorted side being a little bent. The sling, *Fig. 5.* is to be fastened firmly round the lower head of the thigh above the knee, the skin being first drawn tight upwards, as we advised before in a luxation of the humerus; it is then to be firmly fastened to the rope *dd* passing round the wheels *cc* of the machine, *Fig. 3. dd.* And lastly, the legs or horns of the machine *ea*, are to be put through the apertures in the retinaculum *dd*, *Fig. 4.* and by winding up the rope by the hand *e*, *Fig. 3.* it is to be gradually extended, till the surgeon perceives by the limb that it is sufficient.

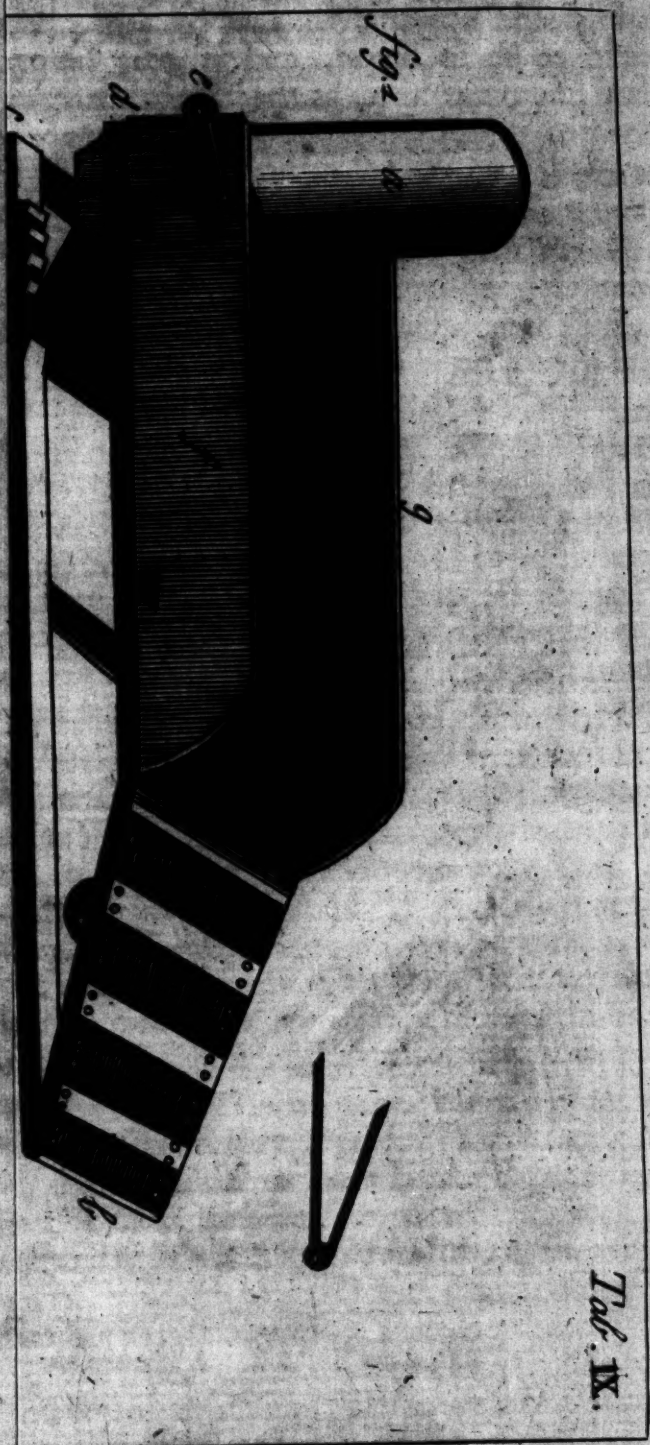
TABLE IX.

Represents the fracture-box of M. *Petite*, a celebrated surgeon of *Paris*, described and published by him in *Mem. Acad. Reg. Paris, Anno 1718.* described in *Q. 179.*

TABLE X.

Fig. 1. Represents a cupping-glass.

Fig.



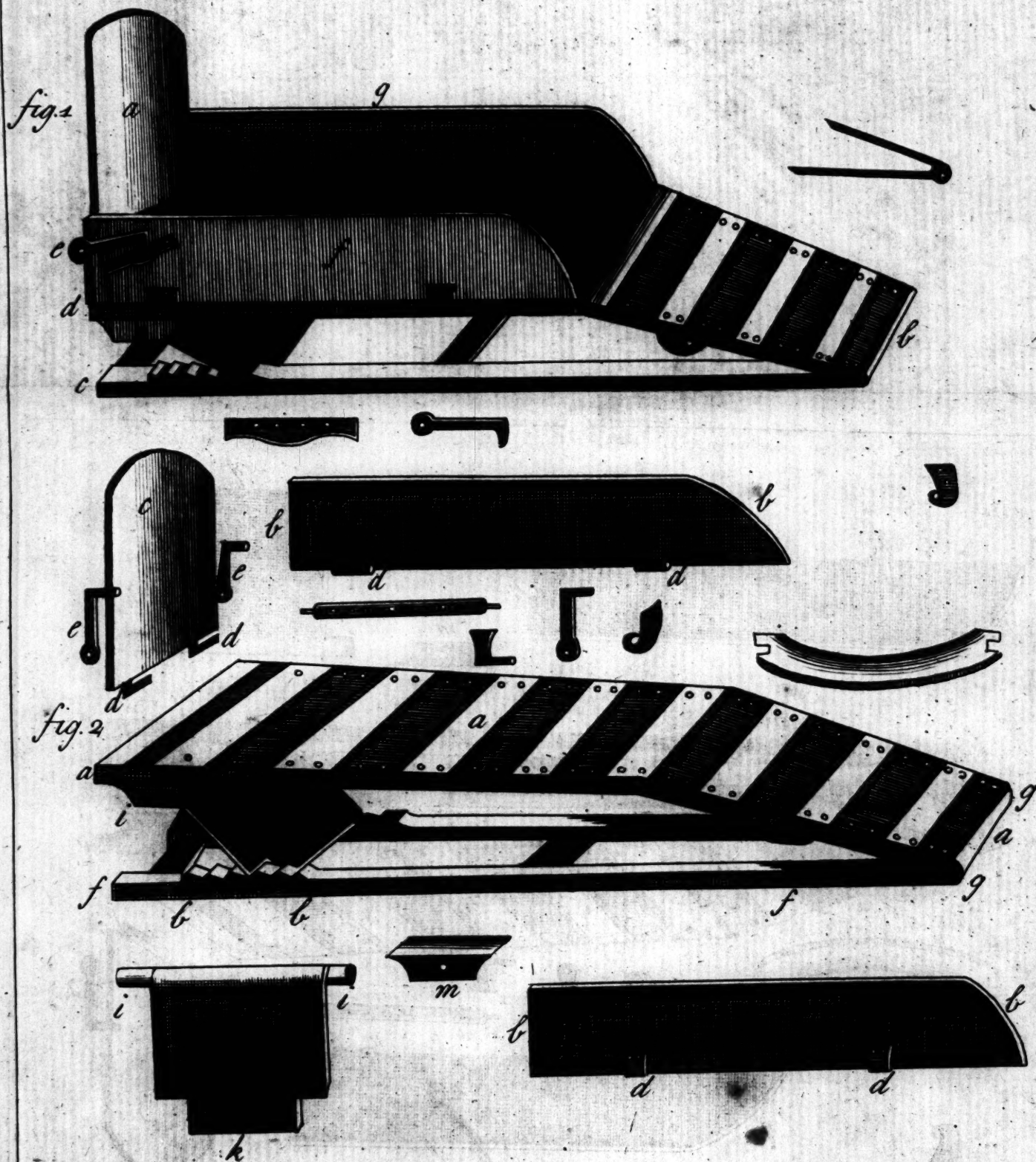




Fig. 2. A scalpel or single scarificator, much used in Germany, but not among us. *a* the handle, *b* the edge, *c* the part which is struck very quick with the end of the finger to wound the skin.

Fig. 3. Represents the order or position of the incisions made in the skin by the cupper, that they may be all of them intercepted by the cupping-glass, *Fig. 1*.

Fig. 4. Exhibits the modern scarificator now universally used, makes sixteen incisions in the skin with little pain, by one stroke in the order of *Fig. 3*.

Fig. 5. Represents a pair of pliers for pinching up the skin in the neck in order to make a seton, by passing the seton needle through the opening of the pliers *b*, which are held fast upon the skin by the gripe *a*.

Fig. 6. Represents another pair of pliers, for the same use.

Fig. 7. Represents the manner of securing a fractured arm with splints and compresses, *a a* tied over the bandage by the strings *b b b*, with knots on the outside of the arm, and suspended by the sling or napkin about the neck *c c c* tied in a knot upon the shoulder *d*, and sustaining the pasteboard case *e*, for a fracture of the cubitus, this last being unnecessary in a fracture of the humerus.

Fig. 8. Represents a straw case, with the manner of fixing it to a fractured leg.

two junks or cylindric bundles of straw, with a stick in the middle of each; *bbb* the subjacent pillow; *c* the foot-board; 1, 2, 3, 4. tapes by which the whole is tied fast to the leg by as many knots on the outer side; *efg* the ligatures fastening the foot-board to the straw junks on each side.

TABLE XI.

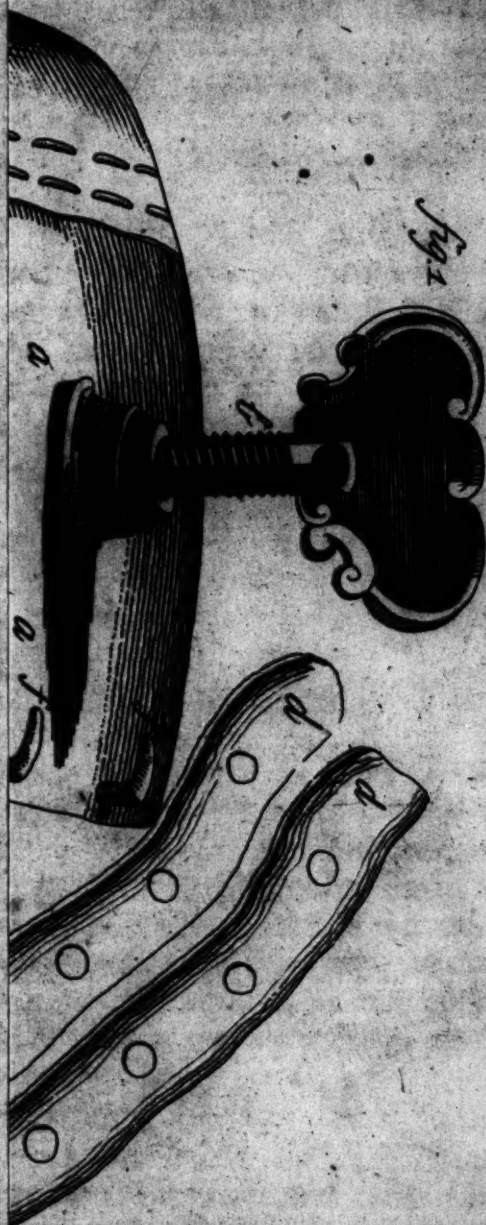
Fig. 1. Represents a brass tourniquet after the manner of M. *Patte*. *aa* a brass plate a little incurvated; *bb* a strong brass screw; *cc* the moveable plate likewise a little incurvated, which immediately compresses the artery; *dd* a strong leather belt fastened to the upper plate *aa*, and passing through the opening *e* of the lower plate *cc*, and fixed by the holes to the two hooks in the upper plate marked *ff*. This instrument is one of the first used in the operation of amputating the upper and lower extremities.

TABLE XII.

Fig. 1. Represents the manner of amputating the hand or arm, with the manner of placing the assistants and surgeon. *a* denotes the patient, *b* the surgeon amputating with a saw, *c* the assistant extending the hand, *d* another assistant holding the arm, *e* the assistant who holds the patient's body, and takes care of the tourniquet; *f* the dish or vessel placed underneath to receive the blood.

Fig. 2. Represents the thigh marked *a*, with the leg amputated *b*, in which may be seen the tourniquet *c*, in order to amputate the foot in the tarsus or metatarsus, and also for amputating the leg

Fig. 1



Tab. II.

fig. 1

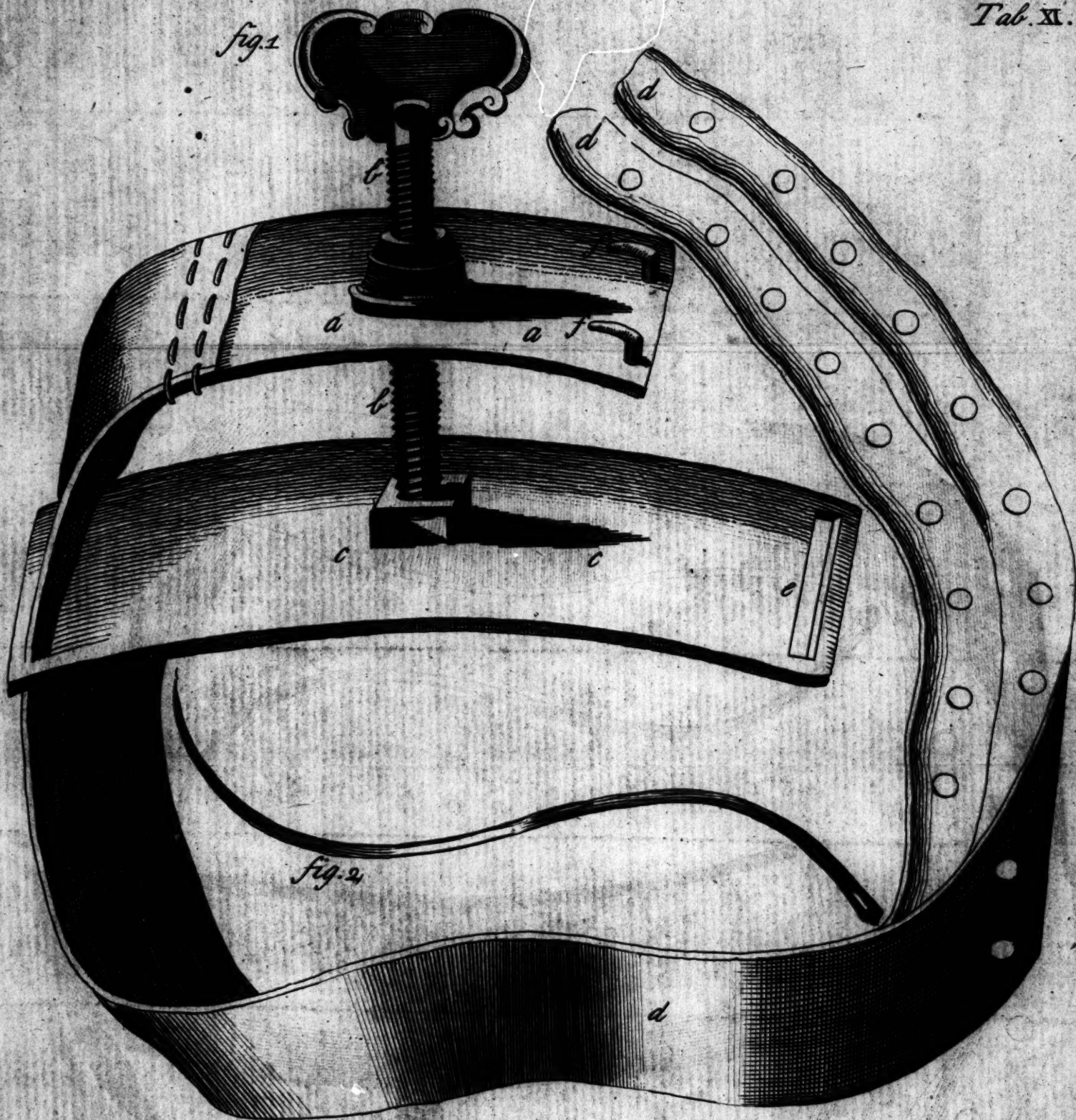
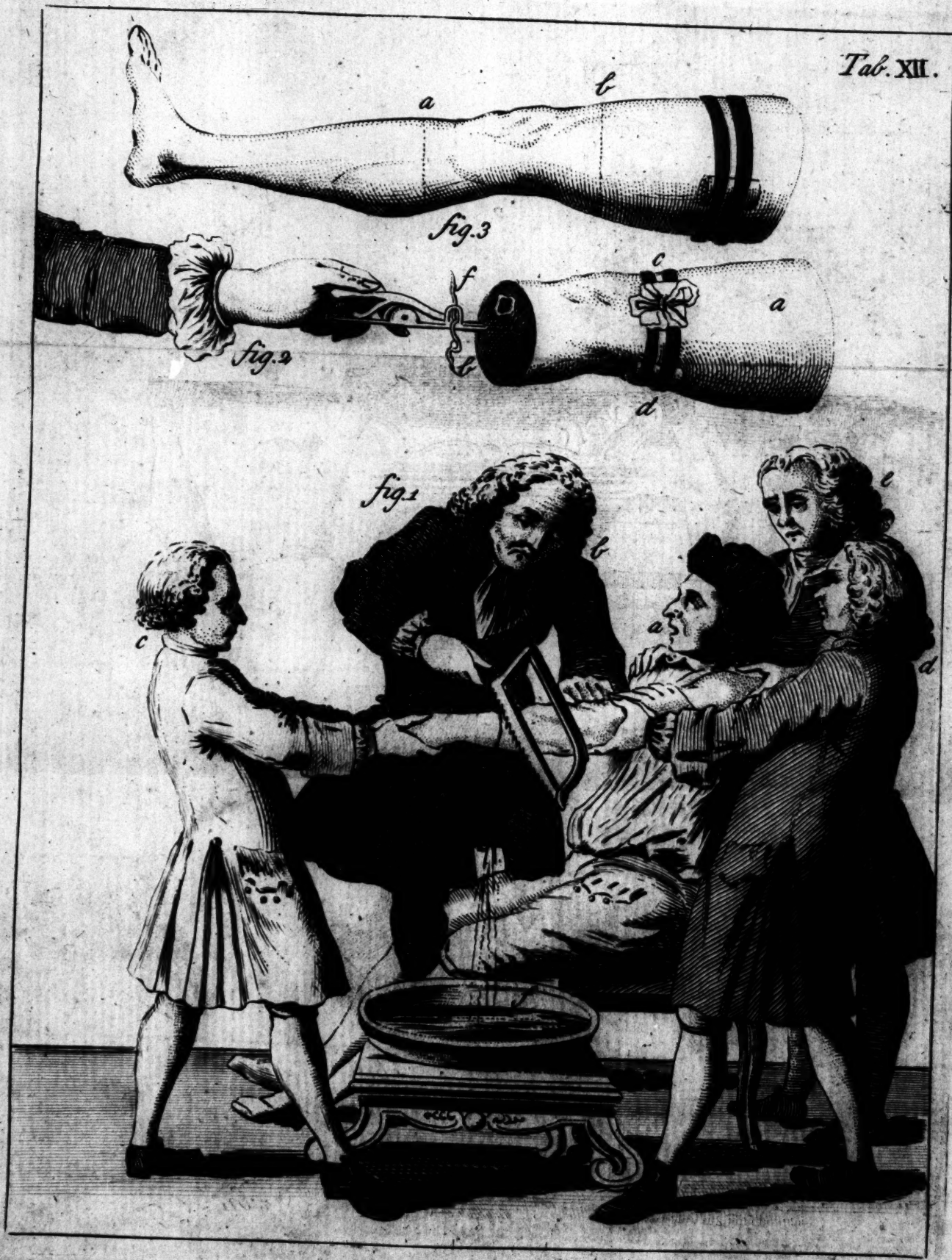
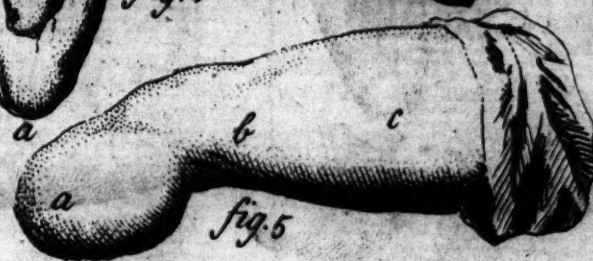
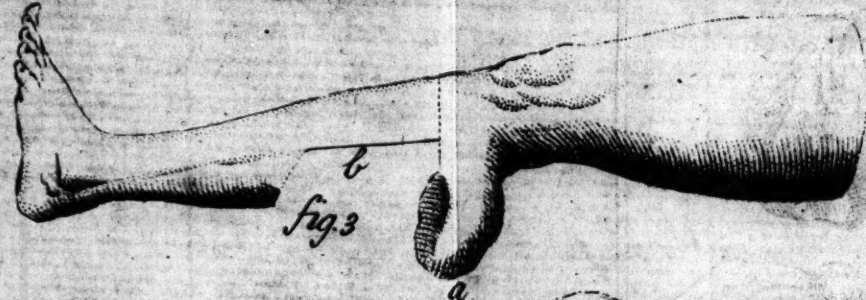
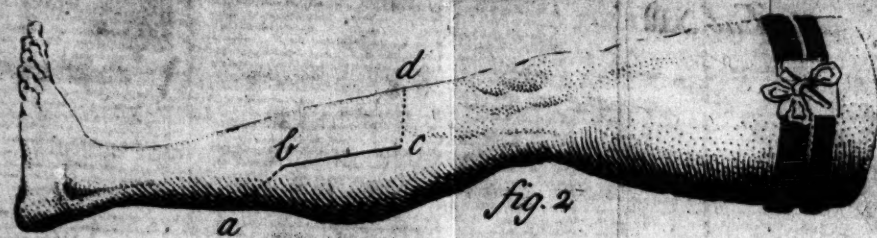
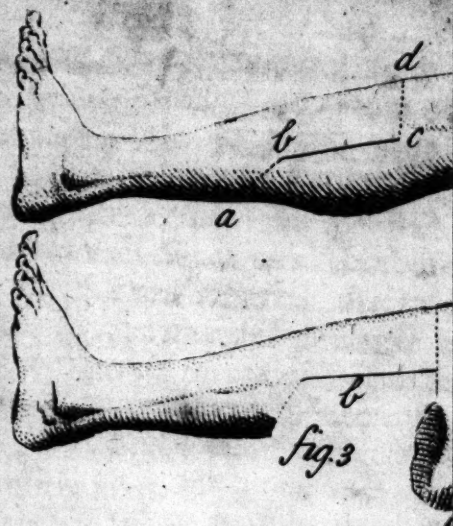


fig. 2







leg or thigh ; though for the latter the tourniquet may be more conveniently placed higher up. In this figure you have also a view of the divided artery extended a little by the pliers *e*, in order to be tied by the ligature or knot *f*. There are some indeed, who think this method of securing the arteries by ligature not sufficiently safe, whereas it is found by experience to answer very well, provided the ligature be not too small, but of some breadth, to prevent it from cutting thro' the coats of the artery ; and at the same time you by this means avoid the fatal symptoms which are often brought on when the nerves together with the circumjacent flesh are constringed along with the vessel, in the way of making ligatures by the needle ; and this is a circumstance which ought to be guarded against with all possible care, as convulsions and even death itself may be the consequence of such a stricture upon the nerves, when the surgeon does not in the least suspect the real cause.

Fig. 3. Represents the most convenient part for amputating the leg at the mark *a*, and the thigh at the mark *b*. But when the disorder has extended itself higher up in the thigh, the amputation must be made proportionably above this mark, though the operation then becomes the more dangerous.

T A B L E XIII.

Fig. 1. Represents the position of the surgeon, patient and assistants, for amputating the leg. *a* the patient seated in a chair, *b* the surgeon, *c* the assistant

assistant holding the foot below the calf, & the assistant holding the leg above the knee, & the vessel placed on the floor to catch what little blood may be spilt in the operation.

Fig. 2. Represents the manner of amputating the leg, so as to preserve the calf to fold over the extremities of the bones, *ab* denotes the first incision to be made by the two-edged scalpel, *bc* the course of the second incision, by which the flesh of the calf is separated from the bones of the leg, *cd* the place where the bones of the leg are amputated. Some indeed reverse this course of the incision, and first perforate the calf with the two-edged scalpel, according to the line *c*, and then they direct the knife in the course *ba*.

Fig. 3. Shews the manner of reflecting back the calf of the leg towards the ham, after it has been separated from the bones by incisions; which done, the surgeon next divides the integuments, flesh and periosteum in the line *b*, and then saws through the bones in the same place.

Fig. 4. Represents a leg just amputated in this manner, with the calf *a* depending, so that one may see the ends of the bones; *b* the tibia, *c* the fibula.

Fig. 5. Represents a leg thus amputated with the calf *a* brought over and joined to the stump *b*, *c* denotes part of the thigh.

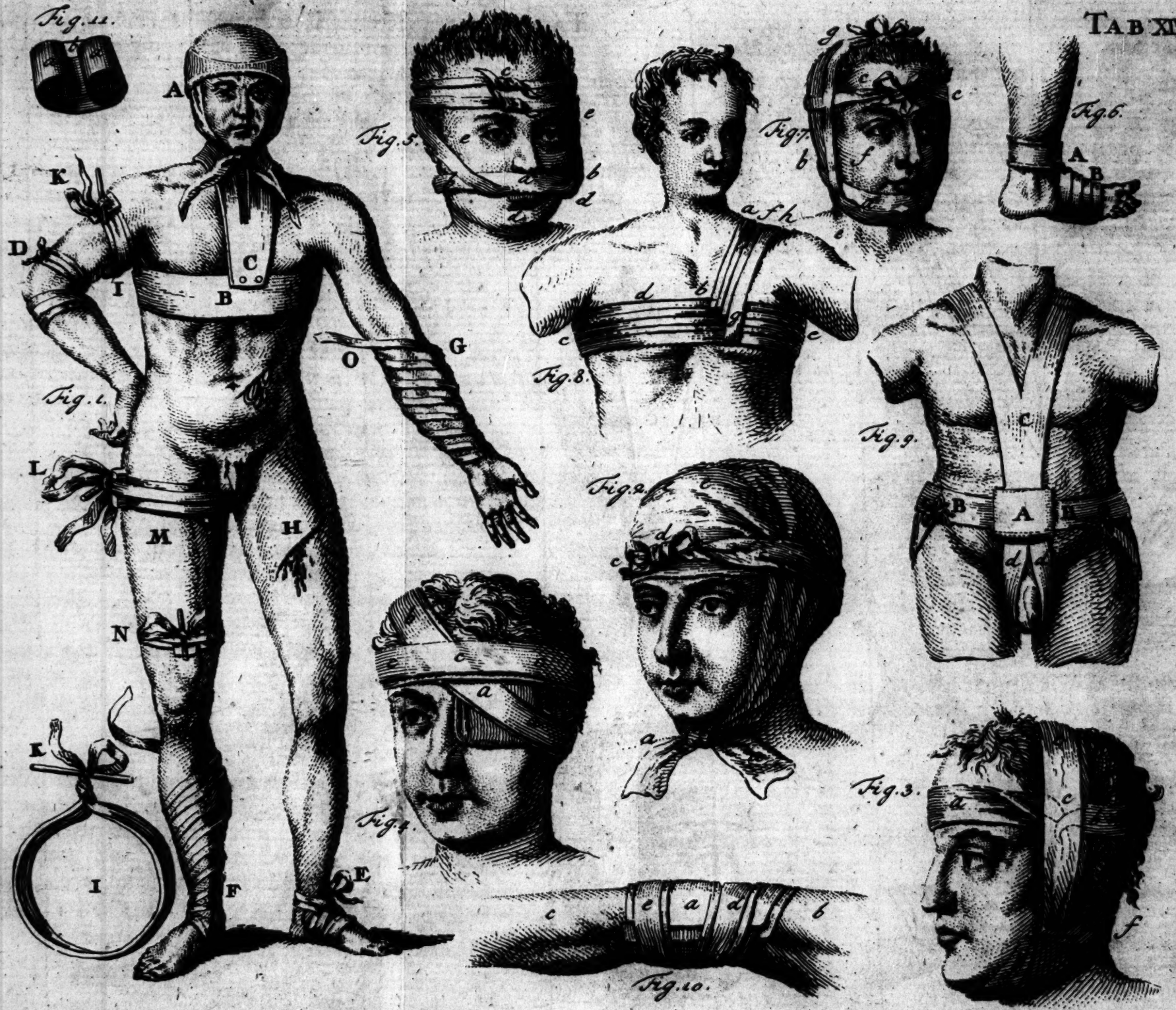


Fig. 11.



Fig. 1.

Fig.

Fig.

Fig. 6. Represents the manner of fixing the screw-tourniquet, *Tab. N.* upon the thigh before amputations, &c.

T A B L E XIV.

Fig. 1. A represents the grand kerchief or capital bandage used after trepanning, and in wounds of the head, but represented more particularly by *Fig. 2.* — B C represent the napkin and scapulary. D the manner of applying the ligature after bleeding in the arm. E denotes the bandage called a stirrup to be applied after bleeding in the foot. F G represent the oblique spiral course in which bandages ought to be applied upon the leg or arm, that they may sit firm upon the limb without subsiding. H a transverse wound of the thigh, the lips of which require to be retained by the true suture. I the part of the arm where the tourniquet is applied : the compress I being fixed within-side the arm, the ligature is drawn tight by twisting the turn-stick K, which is secured from pinching the flesh by a piece of pasteboard. L M shew the common tourniquet applied to the thigh in the manner which is necessary when the leg is to be taken off above the knee. N represents the tourniquet fixed upon the lower part of the thigh ; as when the leg is to be taken off below the knee.

Fig. 2. Represents the grand kerchief applied after trepanning, and in wounds of the head. It is made with a napkin folded one third over the other, after which it is applied with the middle upon the head, so that the edge may extend almost to the eyes, and the corners hanging over the

the cheeks, the two uppermost of the narrow part are tied under the chin *aaa*; but the anterior corners of the lower and largest fold of the napkin are carried back and round the occiput *b*, and fastened on each side near the ears. *cc* represent the posterior angles brought from the occiput to the forehead, and there fastened by the knot *d*; *ee* the middle of the bandage investing the head.

Fig. 3. Represents the knotted bandage to be applied after opening an artery in the temples, or after the extirpation of a scirrhus parotid gland, or a wound, &c. It consists of a double-headed roller five or six ells long, and of two fingers breadth, applied with the middle to the sound temple opposite the wound; then carrying the two roller heads *a* and *b* to the other temple, they are crossed so as to form the knot *c* upon the dressings, from whence one roller is carried under the chin *d*, and the other over the vertex of the head *e* to the sound temple, where they are crossed, and the like course repeated as before.— But after the extirpation of a scirrhus parotid, &c. the bandage is applied with its middle on the sound side; and after the first circumvolution about the head as before, the perpendicular course of it *de* is oftener repeated, and instead of making the knots or crossings upon the temples, they are here fixed upon the parotid or wounded part under the ear *f*, securing the extremities of the bandage by suture.

Fig. 4. Represents the bandage for disorders of the eyes, which is termed either monocus or binocus, according as it invests either one or both eyes. The first is made with a single-headed

ed roller about three ells long, and of two fingers breadth, applied with the end upon the occiput; from whence it is carried obliquely round over the dressings *aa*; and over the forehead *b* to its origin at the occiput. This course being thrice repeated, the rest of the bandage terminates circularly about the head *c c c*. The binoculus is made by repeating the same oblique course of the bandage upon the other eye *aab*, before it terminates circularly about the head *c c c*.

Fig. 5. Represents the bandage for the hare-lip; *a* its middle, which is not slit; *bb* its two upper heads, which are tied upon the forehead at *c*; *dd* its lower heads, which being carried obliquely over the cheeks *ee*, are crossed upon the occiput; and then fastened by a knot on the forehead under the former.

Fig. 6. Represents the manner of applying the bandage after bleeding, a fracture, or luxation in the foot: *A* the circular rounds about the ankle: *B* the spiral and circular turns about the tarsus and metatarsus.

Fig. 7. Represents the bridle for a fracture or dislocation of the lower jaw; the middle part having an opening is applied to the chin *a*; after which the two upper heads are carried round *b*, and crossed on the occiput; from whence being brought over the forehead *c c*, they are tied in a knot; but the two lower ends of the bandage *e* are carried up by the sides of the cheeks *f*, and fastened with a knot *g* upon the crown of the head, or else carried down again, and tied under the chin.

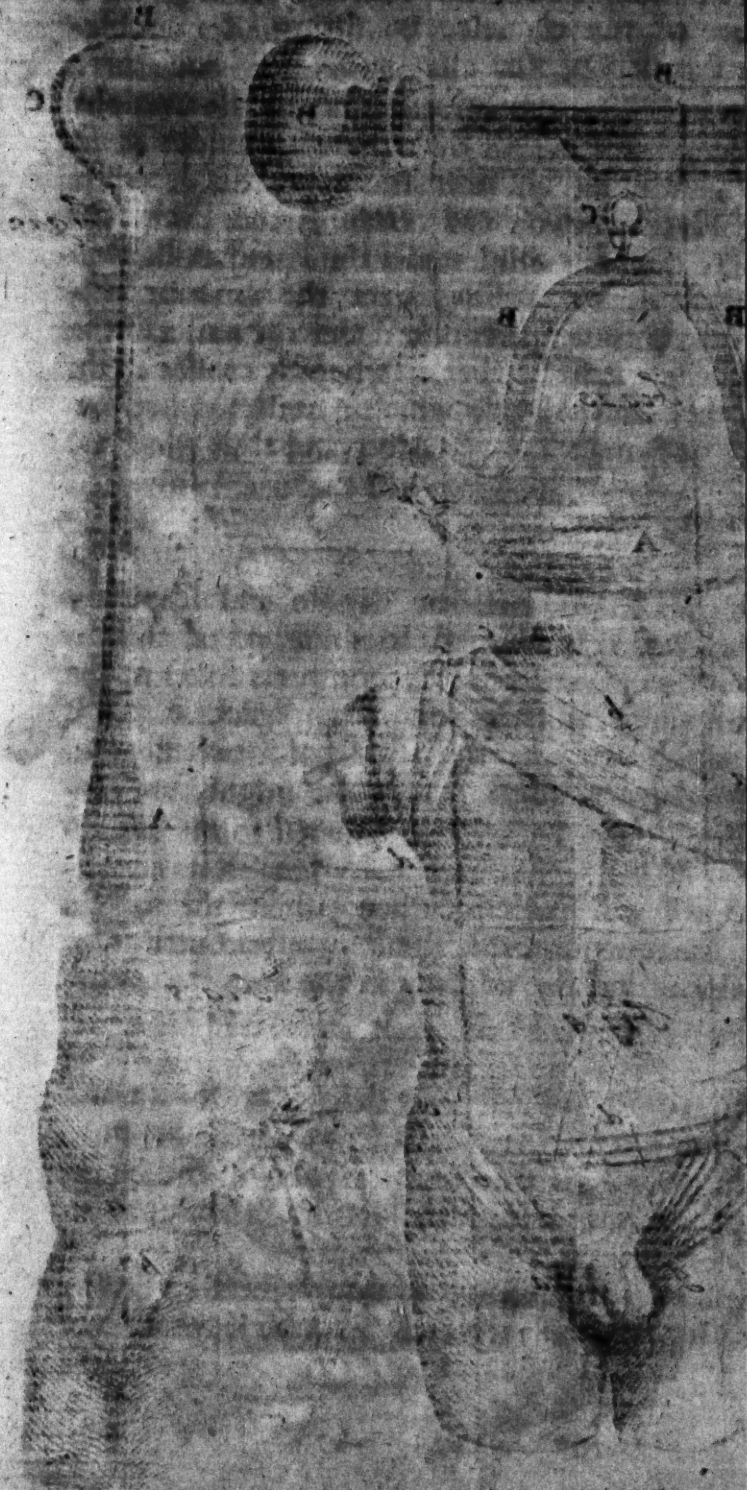
Fig. 8. Represents the reflexed bandage for a fracture of the clavicle, consisting of a double-headed roller of six ells in length, and three fingers breadth, applied with the middle over the dressings to the top of the affected shoulder *a*, so as to pass obliquely over the præcordia *b*, while the posterior roller-head crossing the back obliquely, comes round under the sound axilla over the breast *d*, and passing over the anterior roller-head continues its course under the axilla of the affected side *e* to the back, where it crosses again the other roller-head, which is reflected back as before at *f* upon the clavicle; and thus the same course is repeated again till the part is invested *g h*.

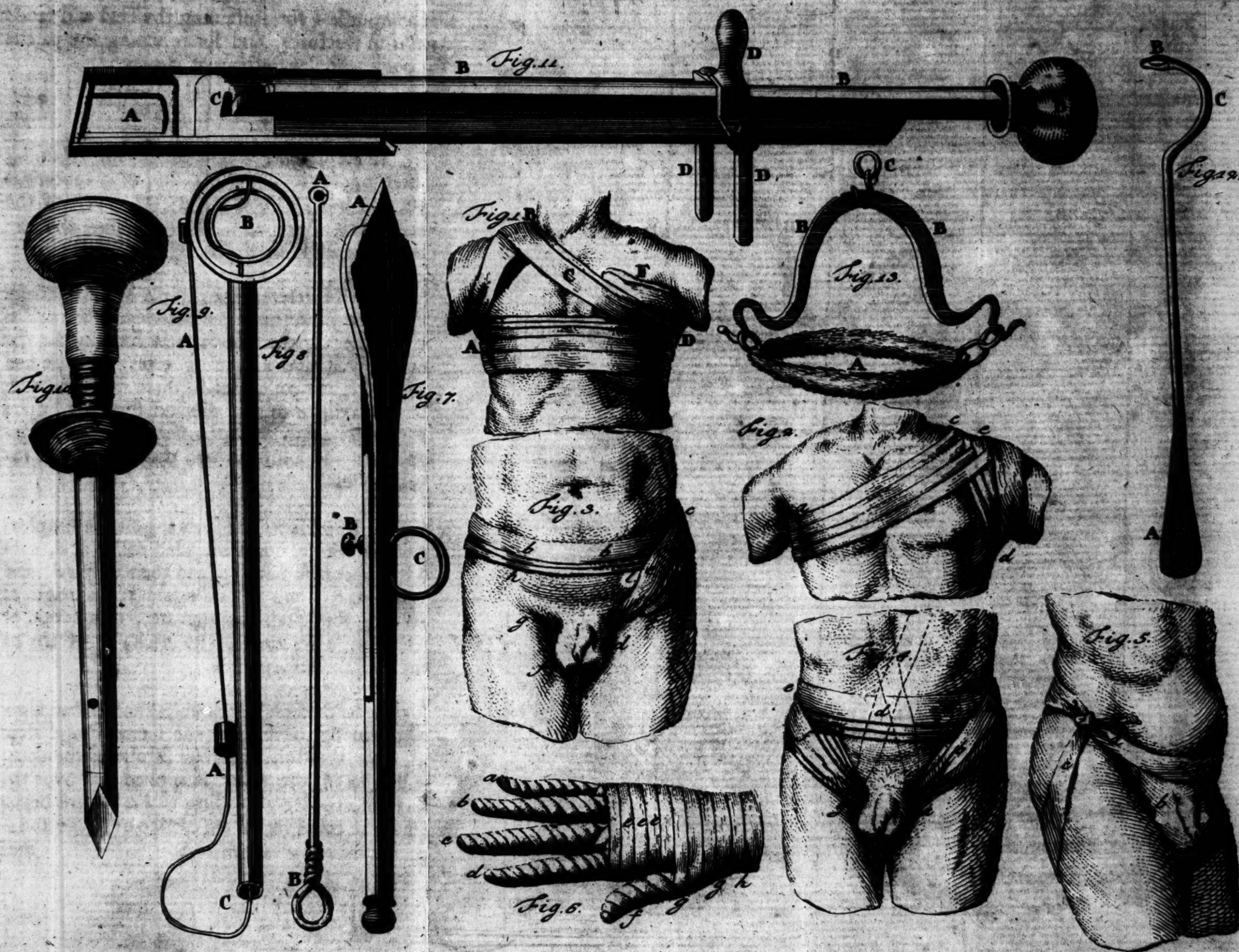
Fig. 9. Represents the napkin and scapulary bandage, as it is adapted to disorders of the abdomen and perinæum. *A* compress fixed to the napkin and scapulary for an omphalocele. *BB* the napkin. *C* the scapulary. *dd* two slips of the bandage passing betwixt the thighs, are carried round the nates, and fastened to the napkin or belt at *BB*. This scapulary *C* with its appendages *dd* will likewise suffice without the napkin *BB*, for retaining the dressings after cutting for the stone, or for a fistula in the anus, a bubo, &c.

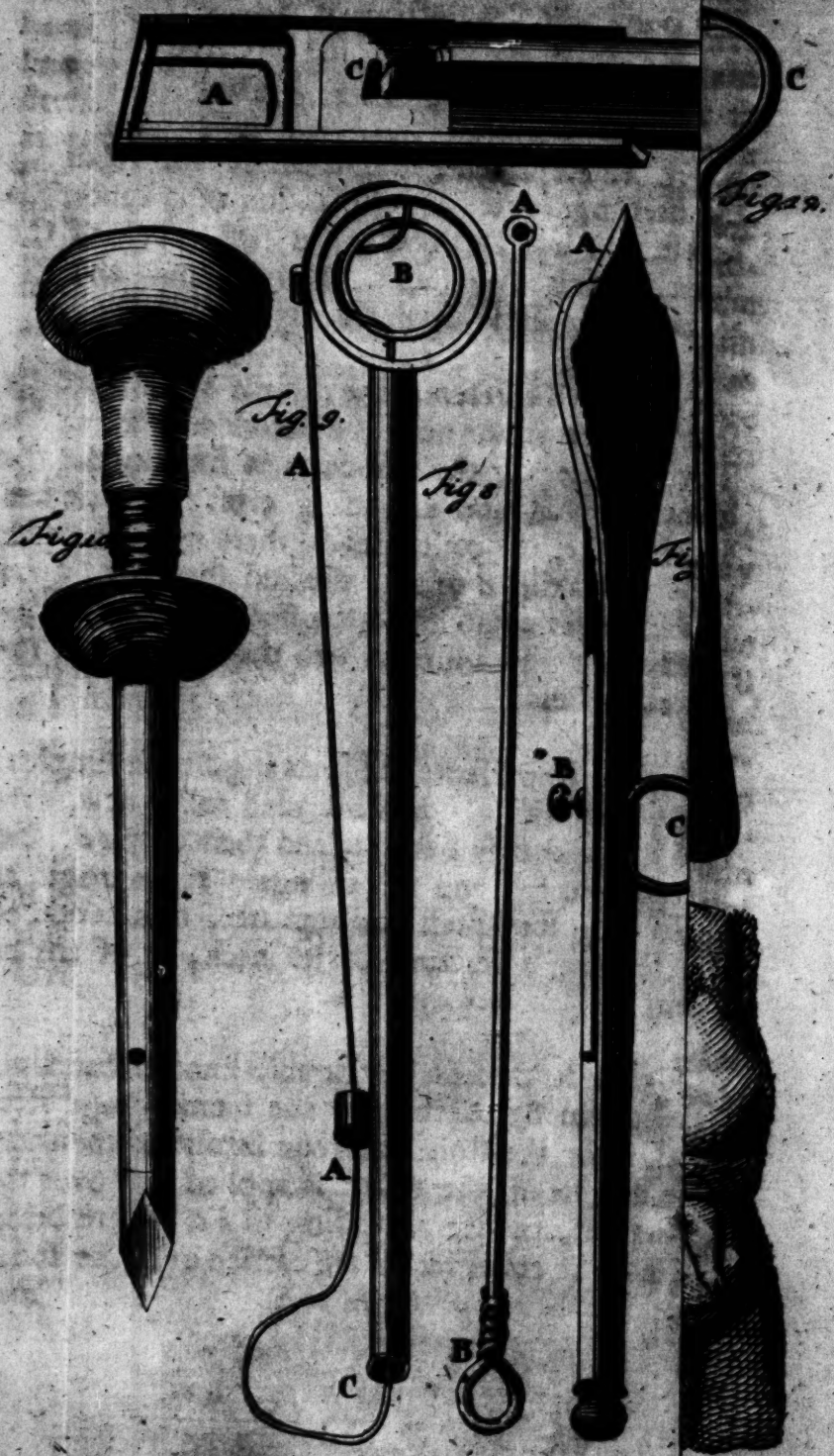
Fig. 10. Represents the delegation for a transverse fracture of the patella. *a* the patella, *b* the thigh, *c* the leg, *d e* the turns above and below the patella, crossing in the ham like the figure 8.

Fig. 11. Represents a double-headed roller sewed together at each end, so as to leave a space in

TAB. VI.







the middle *b* for sustaining the heel and tendo *Achillis* in fractures; and for retaining the patella in a perpendicular fracture of it.

T A B L E K V.

Fig. 1. Represents the bandage for retaining the dressings after an amputation of a cancerous breast. *A B C D* denote the first course of the roller, which is repeated several times, and terminated circularly upon the dressings *E F*.

Fig. 2. Represents the simple spica bandage for injuries in or near the shoulder and axilla. The middle of the bandage is fixed under the sound axilla *a*, and ascending cross the back and breast *b* to *c*, the roller-heads there cross and pass under the axilla *d* of the affected shoulder, upon which it rises again and is crossed at *e*, thence descending to the axilla *a*, and the same course repeated as before.

Fig. 3. Represents the spica inguinalis simplex, beginning with a double-headed roller at *a*, carried in the course *b b* to *c*, and thence by *e d*, and up again to *c*; and thence again to its origin at *a*, serving for intestinal ruptures, a luxation of the femur, a fracture of its neck, or of the os ileum.

Fig. 4. Represents the double-knotted bandage, serving chiefly to restrain the hæmorrhage after cutting for the stone, and the fistulæ of the anus. The middle of the roller is applied first over the perinæum, thence according to *b c*; where being crossed, the roller heads are carried over the abd-

then and back *d* to *e*, crossed and carried along *f* to *g*, where the roller heads change hands, and form a knot like that for arteriotomy, *Tab. XIV. Fig. 3.* and the same course repeated as at first. But to make the bandage stricter, the rollers may be carried obliquely upwards over the shoulders in the course represented by the two pricked lines.

Fig. 5. Represents the bandage for investing the scrotum, called a bag-truss; *aa* the transverse part that goes round the body, *bb* the perpendicular part with the aperture *c* to transmit the penis.

Fig. 6. Represents the glove-bandage for a burnt or scalded hand, made with a piece of tape six ells long and an inch broad, begun upon the carpus *b*; whence it is carried across the palm to *a*, which is the first invested by a spiral ascending and then descending turns, thence to *b c* and *d* in the same manner; from which last it goes circularly about the metacarpus *eee*, then about the thumb *gf*, and from thence terminating circularly about the carpus *gb*.

Fig. 7. Represents the paristhmiotomus for scarifying the tonsils when inflamed, or opening them when suppurated. *A* the concealed scarificator, *B* the handle by which it is moved forward, *C* the handle of the instrument by which it is held.

Fig. 8 and 9. Represent a brass instrument contrived by *Hildanus* to extirpate a diseased uvula by ligature. *AA*, *Fig. 9.* denote the thread or ligature properly disposed and fastened in the instrument

strument, B the loop of the ligature which intercepts the uvula, C the part of the ligature which is to be drawn by the hand. Fig. 8. denotes a wire of steel or brass for transmitting the ligature through the cannula of the preceding instrument. A the aperture which transmits the ligature, B the handle.

Fig. 10. Represents a trochar or steel triangular-pointed bodkin included in a silver cannula, for making the paracentesis of the abdomen to discharge the water in a dropsy: they ought exactly to fit each other, and the edge of the cannula should be rounding towards the bodkin or perforator, to make it enter the more easily.

Fig. 11. Represents an instrument for amputating the uvula: A the part which is to receive the uvula, B B the handle by which the blade C is thrust forward to A to cut off the uvula, D D D denote the handle of the whole instrument by which it is to be held.

Fig. 12. Represents an instrument contrived to pass a string round the root of a polypus to remove it by ligature: A the handle, B C the eye and curvature.

Fig. 13. Represents an instrument to swing children by the head to straighten the wry neck, or a crookedness of the spine: A the collar lined with fur, B B an iron arch admitting the head, and suspended by the ring C, by which the patient is lifted up from off the ground.

A a 3 u s i n i q u e d i t o Fig.

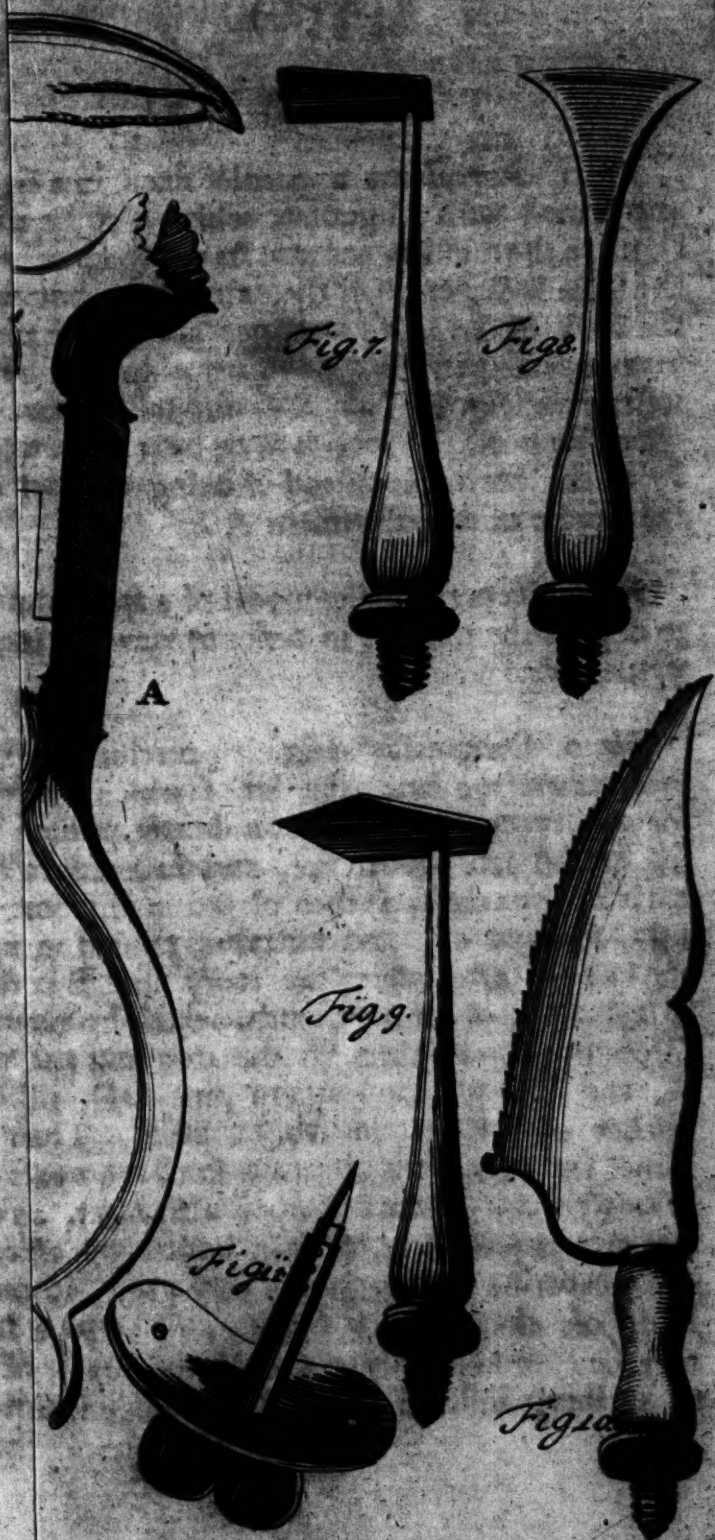
T A B L E XVI.

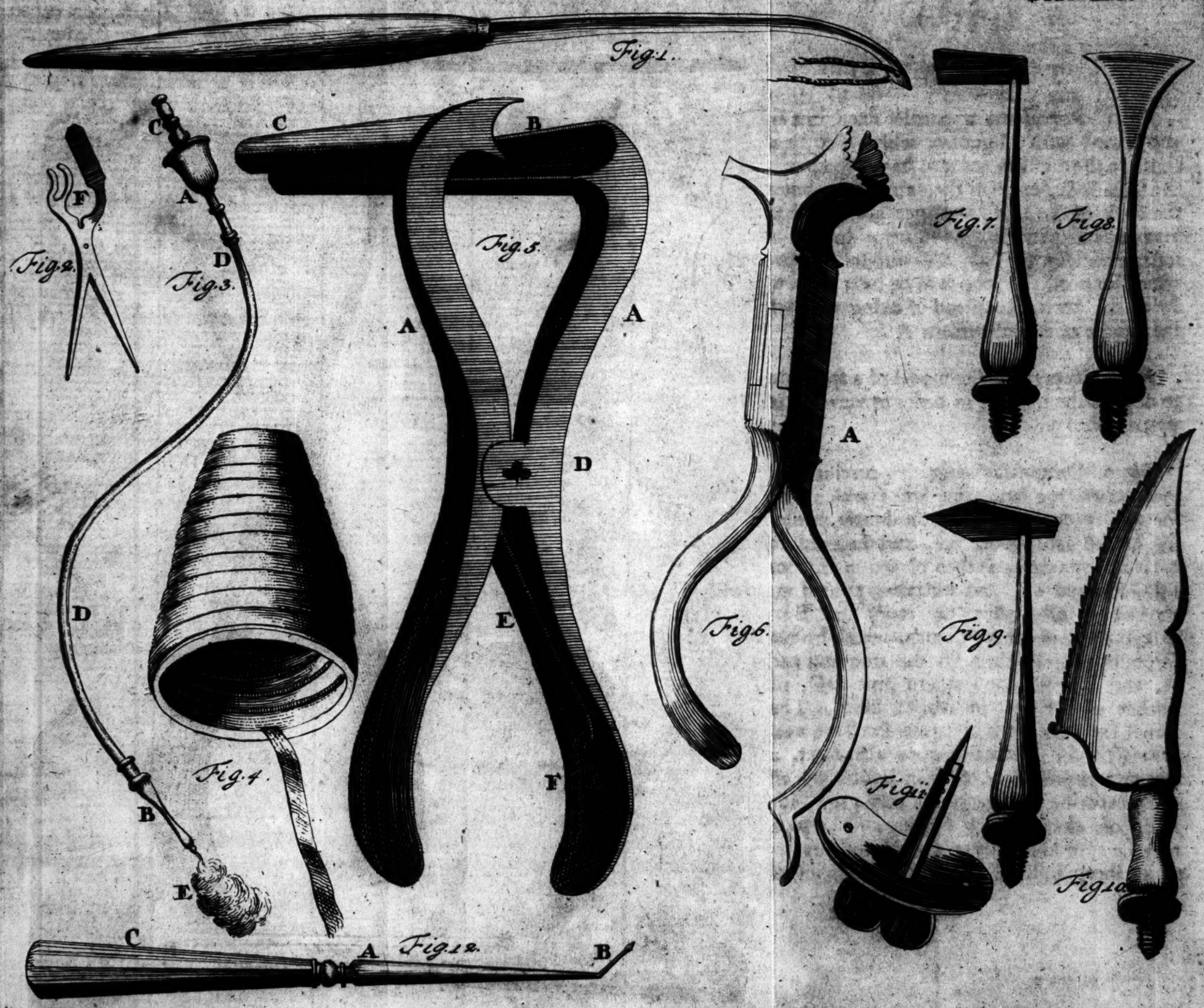
Fig. 1. Represents a needle fixed in a handle and armed with a ligature, which is to be passed through the tonsil in order to its extirpation, when the basis is larger than the extremity: but when the apex of the tonsil is larger than the basis, it may be extirpated by the ligature applied by the instrument *Fig. 9. Tab. XV.* supposing the ring which supports the loop B to be bent perpendicular to the horizon, instead of being parallel with the handle of the instrument A A.

Fig. 2. Represents the model of a speculum oris to depress the tongue, in order to view the tonsils, uvula, &c.

Fig. 3. Denotes a fumigating machine. A represents an iron box, the lid of which unscrews for the reception of an iron heater, which being heated red in the fire, and suffered to cool till it appears dark, is then placed in the box, the lid C screwed on, and cinnabar poured in upon the heater; after which the ivory pipe B is fixed in and applied to the mouth, which by blowing forces the fumes through the iron box and pipe A, and through the leathern pipe DD, till it is discharged at E by the ivory tube B. Thus the fumes are concentrated into a small compass, so as to act more effectually upon a shanker, an old sore or venereal ulcer, &c. in which the efficacy of cinnabarine fumigations is very great, in order to dispose the parts for healing. The pipe DD may be commodiously made of the ureter of an ox or sheep inflated or dried. This instrument will

TAB. XVI.





will likewise serve for making other fumigations with sulphur, gums, salts, &c. and it will likewise serve to administer a clyster of the smoke of tobacco, supposing the heater to be taken out, and the tobacco fired in the iron box A, the smoke being blowed by the mouth through the pipe DD and B into the anus. It may be also used for blowing moist or dry fumes into the ear, &c.

Fig. 4. Represents an elastic pessory or steel wire turned into a conical worm, and covered over with bees-wax, having a string fastened to the basis for its extraction. It is very useful for sustaining a bearing down of the uterus or vagina.

Fig. 5. Denotes a speculum ani, consisting of a hollow cone BC, which being gently warmed and lubricated with oil, is then introduced into the anus or vagina, and the sides of the cone gradually open for inspection, by pressing on the handles FF turning upon the hinge D, and furnished with the spring E.

Fig. 6. Represents a pair of forceps contrived to take out the circular piece of bone, which has been cut from the rest of the skull by the crown of the trepan, or of the trefine. The extremities of the forceps *a a* are to be made conformable to an arch of the same circle with that of the saw or crown of the trepan, *b* denotes a small elevator affixed to one handle of the instrument.

Fig. 7, 8, 9. Represent different kinds of scraping chisels for the cranium, to be screwed into a convenient handle.

Fig. 10. Represents a small fine saw of a convex figure, for dividing fragments or asperities of the skull.

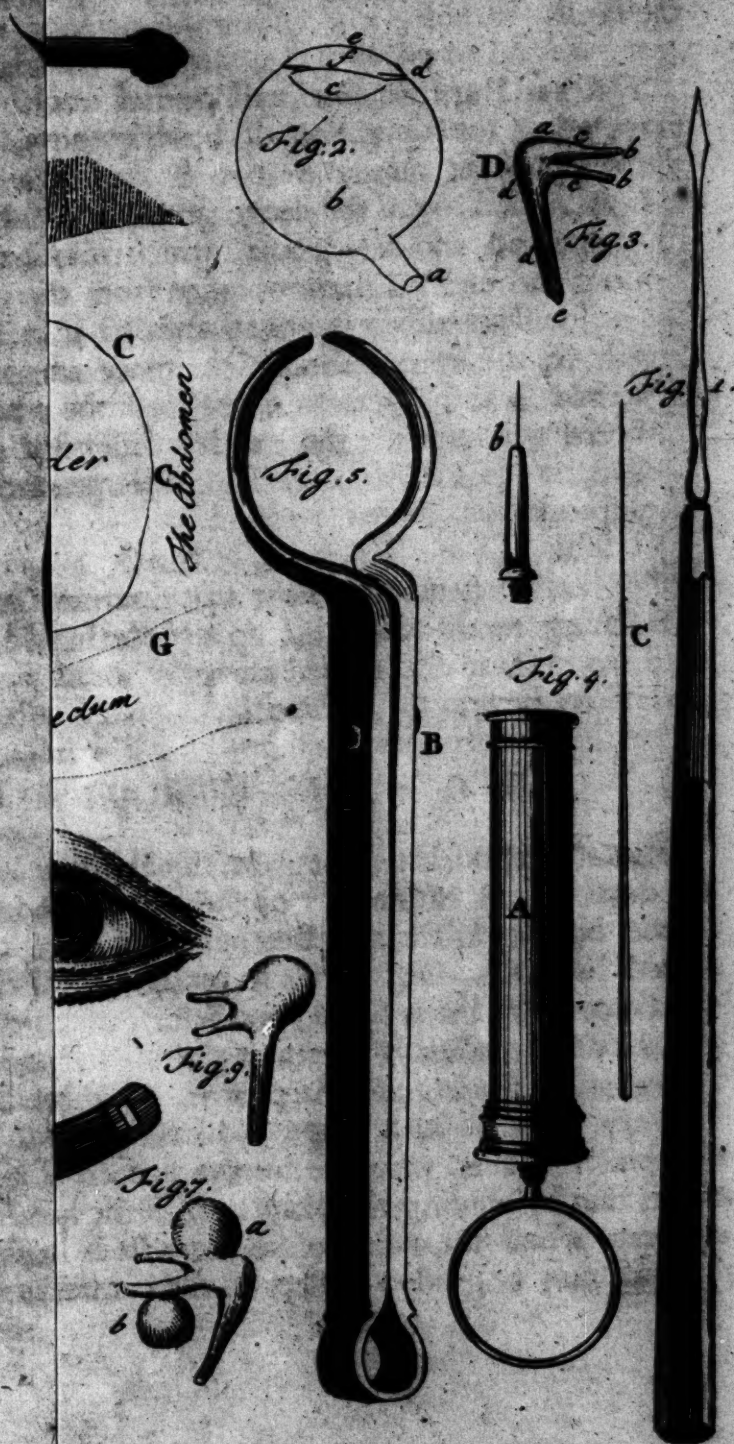
Fig. 11. Represents a small kind of trochar for performing the operation of bronchotomy. In the wings of the canula are two holds, by which it is to be tied round the neck; and within should be contained another canula, which may be taken out and cleaned upon occasion from the mucus or moisture which is apt to obstruct it. The length of the canula should be about an inch; more or less, in proportion as the incumbent parts upon the windpipe are more or less distended and swelled; and its shape may be made rather oval or elliptical than perfectly round.

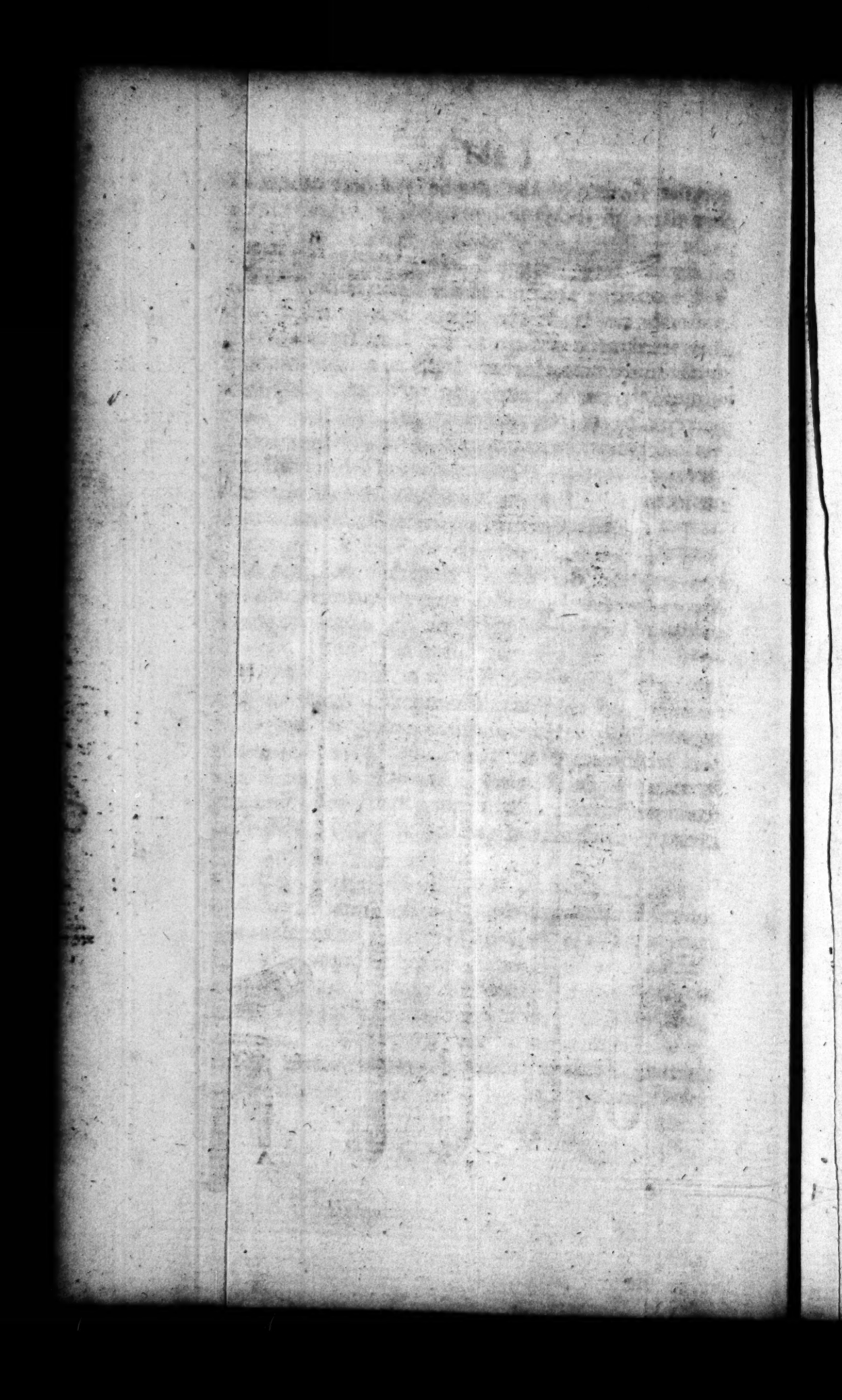
Fig. 12. A steel instrument, to cauterize a hollow aching tooth, and fill it up with leaf gold or lead, to exclude the air and aliments which cause their bony part to rot and decay.

T A B L E XVII.

Fig. 1. Represents a common couching needle for depressing a cataract or opaque crystalline lens to the bottom of the vitreous humour, as represented in *Tab. 2. Fig. 3.* The broad part of the needle at the point is flat on one side, but a little convex on the other to give it a greater strength, as in a lancet tending to a sharp edge. The handle is ivory tinged with a stripe of black upon that side which is even with the convex surface of the blade, that by holding the black part of the handle upwards when the point of the needle is in the eye, one may be guided to depress the cataract by the

TAB. XVII.





the flat surface of the needle when it cannot be seen through the pupil.

Fig. 2. Represents a figure of the human eye: *a* the oblique position of the optic nerve; *b* the posterior cavity of the eye which is filled with the vitreous humour; *c* the true figure of the crystalline lens included in its membranous capsule, from whence go off obliquely the ciliary processes or ligaments on each side; *d* the iris perforated by the pupil *f*, and suspended in the midst of the aqueous humour, which distends the cornea *e*. The space occupied by the aqueous humour is distinguished into two chambers, which bear a great disproportion the one to the other; the anterior chamber, before the iris and next the cornea, being much larger than the posterior chamber next the crystalline lens and behind the uvea.

Fig. 3. Represents the canalis nasalis, which conveys the tears from the eyes into the nose; *b* the lachrymal points opening in the upper and lower eye-lid; *c c* the lachrymal ducts which lead from the puncture to the sack *a d*, which opens into the nasalis canalis *d d e*.

Fig. 4. Denotes a small silver syringe *A*, to which is adapted the pipe *B*, with a capillary tube *b*, to be introduced into the puncta lachrymalia, for injecting warm water, or some other de-terging liquor, in order to cleanse and heal those passages into the nose, when they are obstructed or ulcerated in the fistula lachrymalis. *C* denotes a small capillary probe of gold or silver wire to

be introduced by the puncta lachrymalia, *Fig. 3.* *bb* through the lachrymal ducts *cc* into the nose by the canal *de*, for clearing the passages when the resistance is greater than will give way to the force of an injected fluid.

Fig. 5. Represents a spring speculum oculi made of silver or steel, capable of opening more or less by the button *B*, which slides along a slit in the handle, to support the eye-lids in couching, scarifying, or performing any other operation upon the eye. The instrument is made so as to fly open by its own elasticity, if the branches of the handle were not confined by the button *B*.

Fig. 6. Represents the situation of the lachrymal points *aa*, ducts *cc*, and sack *d*, with the nasal canal *ef*, as they are disposed with respect to the eye represented before by *Fig. 3.* A lachrymal fistula then is an obstruction and inflammation with or without an ulceration in some of these passages, whereby the tears are obliged to run down the cheek, instead of being absorbed and conveyed into the nose by the opening of the canal *f*, and therefore the seat of this disorder may be either in the ducts *cc*, in the sack *d*, or in the canal *e*.

Fig. 7. Represents a lachrymal fistula in the upper duct *a*, and in the lower duct *b*.

Fig. 8 and 9. Represent the same disorder in the sacculus lachrymalis.

Fig. 10. Represents an instrument for making a compressure upon the sacculus lachrymalis, made of

of thin pliable steel covered with velvet, to be adapted and fastened upon the forehead by three pieces of ribband tied about the head, so that the button or plate of the screw may fall upon the lachrymal sack. Mr Sharp, from whom this instrument is taken, tells us that the branch of iron which supports the screw must be soft enough to bend, without which it will be difficult to place the button exactly on the bag. This instrument he thinks capable of curing a recent fistula barely by compressure, or at least that it ought to be tried before the operation.

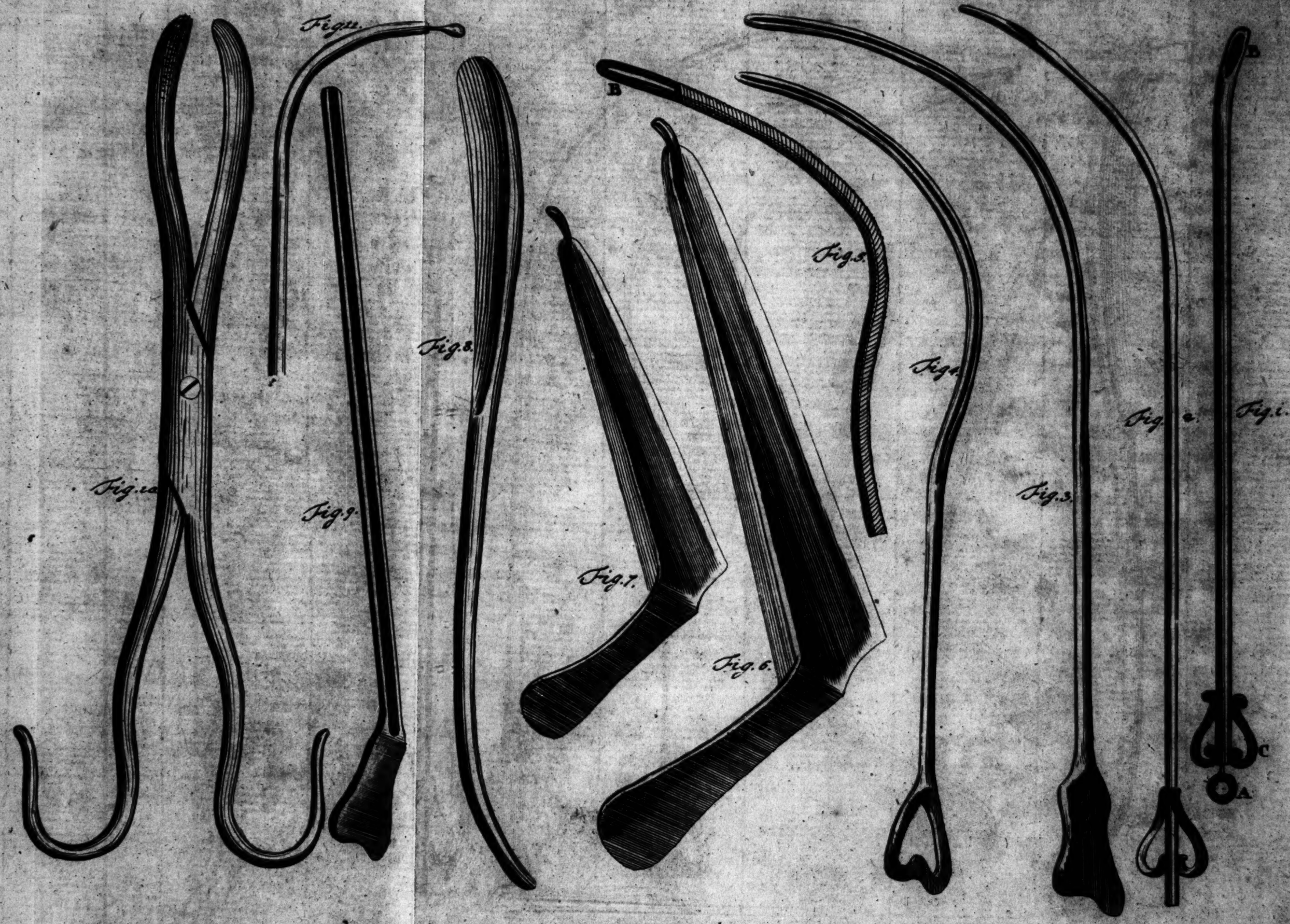
Fig. 11. Represents small tubes of lead or gold A B, which are proposed by some to be left in the parts, to continue a passage from the eye into the nose; but it does not seem practicable to heal the membranes as long as these tubes are left in.

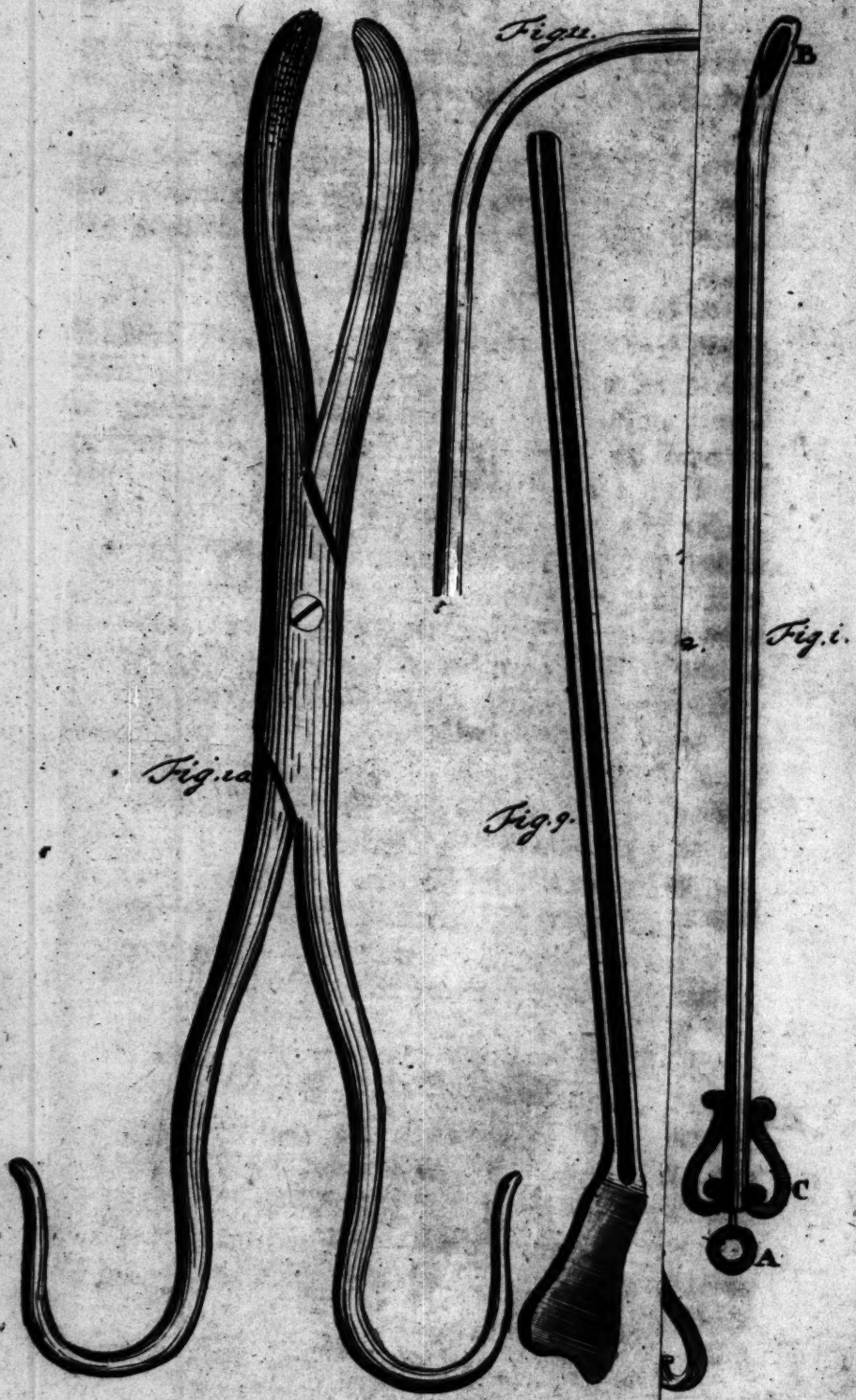
Fig. 12. *a a* represent silver tubes to keep open the new-made passage into the nose after the operation for the fistula lachrymalis, till the passage is become callous or cicatrized.

Fig. 13. Represents a new kind of couching needle invented by Mr Cleland (*Phil. Trans.* N^o 461. p. 844.) You have here both a front and a lateral view (*Fig. 13.*) of this instrument, which differs from the common couching needle in this, that it is made up of two pieces of steel soldered together, and fixed in a handle; at a little distance from the handle they separate, and have in each lamina a button fix'd, which passes through a hole in the other; from this part to the points

they are so nicely applied and polished together, that they cut, and have the shape of a common needle. Upon pressing the buttons the points are separated; and in the inside of the broad part of the points are several small indents, to prevent any thing from slipping after it has once got hold. The use of this needle is, either to depress a cataract; or, if it should be found of such a nature as to bear to be taken hold of, then, by opening the points, to engage it, and carefully bring it out of the eye. If it should happen that in depressing the cataract, or in bringing it out of the eye, some of the small vessels are wounded, and some drops of blood diffuse themselves in the aqueous humour; this second needle (*Fig. 14.*) is made with design to remedy this inconveniency. It is a long, small, round stilet (*Fig. 15.*) gradually decreasing from the handle to the point; and is fitted to a long silver tube of the same shape (*Fig. 16.*) into which the needle is put, and the point comes out at the end a quarter of an inch. This is to be introduced into the eye at the orifice the other needle has made: when it is so far introduced, that the end of the tube is within the posterior chamber of the aqueous humour, the needle is to be withdrawn, leaving the tube in the eye; and then with the mouth may be sucked into the tube, all the blood and watery humour that is contained there, or any other floating particles: then the tube is to be withdrawn, and the eye left to replenish itself with the aqueous humour again, which will take twelve or eighteen hours at most.

Fig. 17. Represents a needle fixed in the handle for elevating and dissecting small blood-vessels in the





the conjunctiva tunica and white of the eye; as also to raise and dissect a pterygium or hard skin.

Fig. 18. Represents a scarificator, or fine steel rasp of a convex figure, designed to scarify the eye-lids and white part of the eye in an ophthalmia.

Fig. 19. Represents a section of the bladder and Urethra, as they appeared by injecting them with wax; an idea of which is very necessary to be had, in order to pass a catheter or staff to search or cut for the stone, &c. A denotes the section of the bladder. B the section of the pubis. C the cavity of the abdomen. D the peritonæum. E the integuments of the abdomen. F the space between the pubis and the peritonæum, taken up by the cellular membrane. It is the place of the incision in the high operation of Lithotomy. G the rectum. H the glans. I the corpus cavernosum. K the urethra. L the elbow of the ligamentum suspensorium. K K the urethra. M the bulb or gulf of the urethra. N the streights and elbow at the entry of the gulf of the prostate. O the gulf of the prostate. P, P, P sort of elbows or blind cavities found therein. Q the streights of the entry into the bladder.

T A B L E XVIII.

Fig. 1. Represents a female catheter, which is almost streight, of a large bore, and adapted to discharge the urine, or search for the stone in women. A the wire, which being drawn out permits the urine to flow through the opening B. C the handle.

Fig.

Fig. 2. Represents a small male catheter made of silver like the former, having two oblong apertures in the extremity, which ought to be very smooth, that it may pass freely without catching against the caput gallinaginis, or any other caruncles in the neck of the bladder.

Fig. 3. Represents a staff fit to cut upon for the stone in boys from eight to fourteen years of age.

Fig. 4. Represents a smaller staff fit for boys from about four to eight years of age, but is too large for the smallest children. The staves are made of steel with a groove on the convex side, which serves to direct and receive the point of the knife in cutting, and afterwards to guide the beak of the gorget (*Fig. 6.*) into the bladder. Of these there should be two more sizes, one less than *Fig. 4.* for infants, and one larger than *Fig. 3.* for men full grown. The edges of the grooves should be smooth and rounding, that they may not cut the urethra; and the groove should be continued quite through the end of the staff, that it may not be apt to catch the point of the gorget.

Fig. 5. Represents the half of a flexible catheter made in the shape of that at *Fig. 2.* only composed of a strong flattened wire, which being introduced into the bladder, supported by the strong silver wire which it includes, adapts itself easily to the figure of the urethra, so that it may be left a considerable time in the bladder to give a discharge to the urine, and prevent it from escaping through the wound in perinaeo, which is apt to become

become callous, and very difficult to cure from that cause.

Fig. 6. Represents a gorget fit for men in the lateral operation for the stone.

Fig. 7. Denotes a gorget for children under five years of age; and one of a size betwixt these two will suit boys from five to fifteen years of age. These instruments are hollow for the passage of the forceps into the bladder, and their handles lie slanting, that they may the more readily be carried through the wound of the prostate, which is made obliquely on the left side of it. The beak at the extremity of the gorget must be smaller than the groove of the staff which is cut upon, because it is to be received into the groove. Care should be taken that the edges of the gorget near the beak are not sharp, lest instead of dilating the wound, as it ought, it should only cut on each side when introduced; in which case it would be difficult to carry the forceps into the bladder.

Fig. 8. Represents a steel scoop to extract the stone when it is broke into small fragments: the small end serving to search for a stone in the bladder through the wound which is made into it.

Fig. 9. Denotes a steel director to conduct the gorget through the urethra in extracting the stone from women with or without cutting.

Fig. 10. Represents a pair of stone forceps, of which there should be several sizes agreeable to the

the age and stone to be extracted: and therefore there should be four or five from the size of that in the table to about a foot long. Mr *Sharp* observes of these forceps, that they ought to be made so as not to meet close at the extremities when they are shut; that the teeth should not be so large as to break the stone; nor seated too near the hinge, which should be made to move freely.

Fig. 11. Represents half a catheter without lateral apertures at the extremity, as in *Fig. 2.* having only a circular opening at the end, which is shut up in the introduction of it by the globular button of the included wire, which is never extracted in this instrument as it is in the others (*Fig. 1, 2.*); but when it is passed into the bladder, the wire is thrust forward, by which means the button is removed from the extremity, and a free passage is made for the urine. This is said to pass more easily through the urethra without wounding or catching against its sides.

Fig. 12. Represents a steel spoon to extract the stone when it is broken into small fragments: the small end serving to search for a stone in the bladder through the wound which is made into it.

Fig. 13. Denotes a steel director to conduct the forceps through the urethra in extracting the stone from women with or without cutting.

Fig. 14. Represents a pair of stone forceps, as when there should be several stones agreeable to the

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Page 2 line 10. read *Diarthrosis*. p. 83. TAB. VIN. read
TAB. VII. p. 84 and 85. Idem. p. 136. for TAB. X. read
TAB. XVII. p. 148. for TAB. XHI. read TAB. XV. p.
170. line. 4. for looking read locking. p. 207. line 25. dele
dry; and after Lint, read moistened with Oil. p. 217. l. 12.
dele or even. p. 239. for TAB. O. read TAB. V. p. 241.
line penult. for 191, read 232. p. 246. line 16. after being,
add by some. p. 252. line ultim. for which, read where. p.
331. for. TAB. C. read TAB. VII. p. 332. line 3. for
slit, read slit. Ibid. line 6. for subsisting, read subsiding.

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WHEREAS, notwithstanding the charitable institution of an hospital for poor and indigent persons, who are desirous of being inoculated for the Small Pox; numbers are deprived of the benefit of this salutary operation, as they come not within the intention of the said charity, which is limited to those who are *destitute of friends*, and *really poor** not to mention the utter dislike many have of going into an hospital; At the same time that it is too expensive for their circumstances, or inconvenient and improper for them in their situation to have it done at home, or in private lodgings.

TO ACCOMMODATE such persons at a reasonable expence, without inconveniency to the families they belong to, Mr Reid, Assistant-Surgeon to Chelsea Hospital, has fitted up a house in an airy and commodious situation at Chelsea†; which is divided into separate apartments for men and women, with different stair-cases leading to them, that every thing may be conducted with the utmost regularity and decency. To these apartments, after being inoculated in another house free from infection, they are at a proper time removed, and there attended and provided with medicines, diet, and every thing necessary (except tea), at the moderate expence of Five Guineas. And the children of many reputable persons, and several domestics of the nobility and gentry, have been inoculated, who have all expressed entire satisfaction at their treatment and accommodations.

BUT as every undertaking of this kind, however useful and advantageous it may be to the public, in its beginning has occasion for the countenance and sanction of persons distinguished by their rank and humanity; AND as this has been attended with a very considerable expence, and is not yet sufficiently known, or rightly understood, to ensure it success; IN ORDER to establish it on a more solid foundation, a subscription of the NOBILITY and GENTRY is humbly solicited to the following proposals:

* See the printed account of the rise, &c. of the Small-Pox Hospital, under the articles of Objects and Inoculating Patients.

† As many persons who frequent Ranelagh for their amusement may be apprehensive of danger, it is thought proper to observe, that the house is above a mile distant from it, and out of any public road.

I. THAT on the payment of ONE GUINEA every subscriber shall have a receipt, with a recommendatory letter annexed; which being either brought or sent by any person, after due information of the age, sex, and constitution, by letter or personal intercourse, the patient recommended shall be supplied with medicines, and directions for their preparation, at home; and, as soon as it is proper, admitted and inoculated, upon payment of Four Guineas more; which is all that will be demanded, unless they meet with any accident that requires chirurgical attendance, or are attacked by any other distemper than the Small-Pox.

II. No renewal of the subscription will be desired, until a patient has been recommended and inoculated; and then, if a subscriber is satisfied that the patient has been properly treated, and well used, it is hoped *that* will incline them to continue their subscription without any farther solicitation: But they may subscribe, at first, for as many as they please.

III. The friends of the patients will be permitted to visit them at any time, observing a proper decorum, according to the rules of the house.

IV. The accommodations and treatment will be as genteel as in any private person's family; and patients will be admitted at any time of the year, except from the 15th of July to the 1st of September, during which time the apartments and furniture will be thoroughly cleaned and repaired.

V. No person will be admitted who has the natural Small-Pox, upon any Consideration; but persons desirous of being inoculated may be admitted at any time, on the payment of *Five Guineas*, unless there should be applications from more persons than the house will hold, and then the preference will be given to those who are recommended by subscribers.

VI. If any inoculated patient should be disappointed of receiving the Small-Pox, as sometimes (though rarely) happens, they shall be inoculated a second time, if they request it, in any time not exceeding *Six Months*, without further expence.

VII. In cases of exigency the advice of a physician will be procured.

VIII. The proposals, with the names of the subscribers, will be delivered to them annually, and due attention will be paid to any alteration or amendment that is recommended.

THIS PLAN is by no means intended to interfere with, or prejudice, the charitable institution of the SMALL-POX HOSPITAL;

HOSPITAL ; but to accommodate those persons who either do not chuse to go into it, or come not within the limits prescribed by its regulations, as not being *desitute of friends or money*, and *really poor*. And it is imagined it may be *particularly useful* to people of distinction, in those cases where they are prevented from bringing children of their tenants or others out of the country, to be about their persons, on account of their not having had the Small-pox ; as by means of this Plan they may be inoculated soon after their arrival, without any danger or inconveniency to the family, at a moderate expence.

It will not be improper, likewise, to point out those particulars which constitute the essential difference between this undertaking and the hospital.

The subscription is no more than ONE GUINEA, nor is any renewal of it desired till after a patient recommended has been admitted and discharged ; whereas the subscription to the hospital is FIVE GUINEAS, and that annual, whether the subscriber has had a patient admitted or not.

These apartments are fitted up in a genteel manner, and the treatment of the patients suitable, no room having more than two beds in it, except *that* for children, which has three ; whereas in the hospital they lie in a ward that has more than twenty.

They are certain of no delay, as the remainder of the money is not paid till they are admitted ; and every individual being paid for by themselves or friends, they cannot be considered as persons supported by charitable contributions. This, and the preceding article must prevent the objections usually made against going into an hospital.

The subscribers will not be troubled with the tiresome solicitations of strangers for recommendatory letters, as it can hardly be imagined they will presume to ask so great a favour as the terms of admission require ; by which they will also avoid imposition ; and by every patient's being known to the person who recommends and pays for them, improper connections with persons of the lowest class in life will be prevented ; a very important circumstance to youth of both sexes, who are chiefly the subjects of this operation.

TO CONCLUDE, in respect to the manner in which this plan will be executed, as the proposer of it to the public has embarked a considerable sum of money in the undertaking, and the success of it depends on a faithful discharge of his duty

duty to his patients, it is the strongest pledge that can be given to the subscribers for the trust they repose in him.

And to satisfy them that he is capable of executing it with abilities and integrity, the following certificate is annexed.

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R. R. GRAHAM, now		
JOS. PARTRIDGE.		

Mr Reid most humbly hopes that the Nobility and Gentry will excuse his personal application to them for their subscription, as he is apprehensive, from the nature of the undertaking he is engaged in, he might inadvertently surprize those who have not had the Small-Pox.